

**PH.D THESIS TITLE**

**" Analysis of creativity in the practice  
and teaching of the visual arts, with  
reference to the current work of art  
students at GCSE level and above."**

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SCHOOL OF EDUCATION

## DECLARATION


Ref. PhD Thesis

*"Analysis of Creativity in the Practice and Teaching of the Visual Arts, with reference to the current work of art students at GCSE level and above."*

I hereby declare that all the work in this thesis is my own.

Any work originated by others is acknowledged as such in the text.

Signed

A handwritten signature in black ink, reading "John Oxlee". The signature is written in a cursive style with a horizontal line underneath the name.

**John Oxlee**

24th June 1996



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## **ABSTRACT**

The specific aims of this investigation were to establish the nature of the relationship between creativity, art, and art education, to study the characteristics and abilities of students, then to identify and test a teaching method favoured by art teachers for improving creative response.

This study traces a chronology of the history of art and art education, from pre-history to the National Curriculum, charting the changes in philosophy and social contexts.

It presents a review of current literature on creativity, framed in the psychological paradigm of division into three parts:- the creative process, the creative product, and the creative person.

Based on the conclusions of this review, a series of tests and questionnaires was devised to test the hypotheses that art students have creative ability to a higher degree than non-art students, and that aspects of their personality, cognitive abilities, and cognitive style influence the production of their creative graphic artwork.

The principal study was carried out on 194 subjects from 35 Institutions. These subjects comprised 73 Sixth Form, and 56 Higher Education art students, with 36 6th Form, and 25 HE non-artists as controls, formed into 22 groups for comparison for age / ability / gender.

The data collected comprised eleven variables:- SES, average "O" grade, motivation, creative factors, pattern preference, original image production, spatial ability, creative personality, divergent thinking, self-actualisation, and cultural awareness.

The qualitative answers to questions were transposed into scores, and together with the scores from the test items, were subjected to statistical analysis and computed by SPSS-X. The aim was to ascertain whether the obtained factors would discriminate between the groups, and thus support the hypotheses derived from the literature search.

The results of these tests showed that art students did score significantly higher on tests of originality, self-actualisation, spatial ability, and aspects of personality related to independence and open-mindedness, but not on tests of divergent thinking and pattern preference.

A further 20 HE art students were interviewed to support the data findings with actual case studies.

The 3rd section of the investigation concerned the analysis of the effects of teaching on the production of creative graphic artwork. Based on the answers of students and art teachers to questions about their art lessons, a "teaching intervention" was devised and tested on 150 Year 11 pupils, with the aim of testing the influence of subject matter, and the effectiveness of stimulus on the production of original graphic artwork. The results showed that the "fit" between pupils and subject matter was important, but that the amount and type of stimulus was less influential than was expected; and also supported the earlier findings that age and gender were not significant factors.

The general conclusions of this study were:-

1. Creativity is a necessary contemporary social activity.
2. Creativity is a high level cognitive activity, but is not domain specific.
3. The brain is itself primarily a creative instrument; interpreting new information, and generating responses are its main function.
4. As creativity is an essential component of contemporary art, creative thinking should be encouraged in the art curriculum.

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## **CHAPTER 1**

### **1.0 INTRODUCTION**

#### **1.1 Origins of this Research**

This project really began in the late 1960s, when the author, as a young art teacher steeped in the traditions of Lowenfeld and Read became fascinated by the idea of creative expression through art; and began reading avidly the work of psychologists who wrote so convincingly on the nature of creativity.

Their work in the main concentrated on creativity as a scientific problem-solving exercise, and so left many questions unanswered on the nature and role of creativity in the arts, particularly the visual arts. Also the criteria for the selection of subjects for experimental samples, that is "creative people", were based on either peer assessment, or the results of verbal fluency tests; procedures which were acceptable at the time, but which in retrospect, look somewhat arbitrary and vague. In consequence the conclusions of these researchers, like Getzels and Jackson (1962), D.W. MacKinnon (1962) and Wallach and Kogan (1965), were too simplistic and so were unsatisfactory.

During the 1970s, general scientific interest in creativity waned. However, in the 1980s many psychologists adopted the paradigm of Cognitive Science, and the "mechanics" of the brain became the subject of massive interest: thinking, memory and learning became the focus of attention for many scientists. Rising out of all this research came the supreme question, how does the brain generate original ideas?

In the 1980s the author returned to teaching and examining art in secondary education after a ten year absence, and was immediately surprised by the "retrograde" steps of contemporary teaching. Much of the experimental work of the 1960s and 1970s had disappeared and the bulk of work being done was more stereotyped, "safe" work, based on direct observation. Personal responses were not necessarily stifled, but open-ended visual experiments were rare. Yet many syllabuses, written by art teachers themselves,

declared that the development of creativity was one of their prime objectives. Clearly there was a problem with the concept of creativity in the context of the visual arts.

So the search for possible explanations began with the re-reading of old articles, looking for any avenues which might lead to an acceptable new theory. This led to the surprising discovery that there was a whole new generation of researchers into the subject of creativity, principally American psychologists. They challenged the earlier ideas, proposed new hypotheses, and questioned the new theories of their peers in an open and direct manner. However, there was still a problem, for though creative thinking was a major topic in cognitive science, few researchers were inquiring into originality in the domain of the arts.

There is a developmental progression to scientific research, and original, "creative" contributions are quite quickly identified. Unfortunately for this study, there is no such "progression" in the arts, only frequent changes in fashion, style and philosophy, making the problem of criteria a major obstacle to objective research. There were, however, enough projects from different sources to crystallise the thoughts of the present author and provide a framework for this study.

A number of studies of "gifted" children and adults have been conducted, and from these came two articles which were to be catalysts for this investigation, as theories with particular relevance to the visual arts.

## **1.2 Special talents, insight, problems in art education**

After studying the current "faculty" models of general intelligence, Lynn Waterhouse (1988), produced "Speculations of the Neuroanatomical Substrate of Special Talents", and claimed that:-

"..., special cognitive talents or abilities are different in source from human intelligence in general ... (they) are based on a set of skills that involve the accurate and extensive representation of visual images and sounds."

"Special talents depend on the ability to store, generate, and manipulate accurate, complex, and novel visual images and sound patterns; and, most important, the ability to perform large-scale pattern generation and pattern recognition on these internal representations."



"Environmental enrichment provides crucially necessary material for the expression of special abilities ... BUT enriched environment and practice however, do not cause or generate special abilities."

"... special abilities ARE special. They cannot be explained away by an appeal to hypermotivated effort or to the upper end of a normal distribution."

Waterhouse cites the work of Gazzinga (1985), Kosslyn (1985), Sacks (1985), in support of these theoretical statements. Here at last was an attempt to explain why some people have a creative talent to an extraordinarily high degree, and why the attainment of these levels is apparently so resistant to both teaching and practice.

The second major contribution to the initiation of this study was the work of Janet Davidson, who with Robert Sternberg worked on "giftedness" within the concept of the brain as an Information Processor. She identified a single variable which was critical for giftedness, "insight". Whilst admitting that this variable proved very resistant to experimental analysis, Davidson (1986 p201-22) identified three kinds of cognitive processes, which when performed in novel ways, form the basis of Insight Thinking.

These three processes were:-

- 1 Selective Encoding: sorting out of stimuli or information that is relevant to one's purpose.
- 2 Selective Combination: putting together seemingly unrelated elements of a problem.
- 3 Selective Comparison: discovering relationships between new information and existing knowledge.

Davidson concluded that the common factor of these processes was "selection", some sort of metacognitive decision-making ability. This concept has echoes throughout the study of creativity and the history of art, in words like evaluation, and intuitive judgement, what the APU (1985) called "discriminatory skills". This ability to make qualitative judgements is one of the key elements in the nature of creative thinking.

The work of Waterhouse and Davidson led me to look for a range of psychological assessment tools which could be applied to groups of art students in an attempt to capture

by quantitative as well as qualitative means what are seen as key aspects of the elusive construct of creativity.

Another major influence on the initiation of this study was the work of Elliot Eisner, whose many writings on art education from 1970-90, confirmed many of the present author's intuitive beliefs. Eisner believed that teachers should have a clear understanding of child development and be aware of the context of their own philosophy of art before they attempt to influence practice.

It was the desire to formalise and substantiate these personal theories and ideas about art education, which like those of most art teachers, were largely anecdotal and experiential, that was a prime motivational factor in the development of this study. In contemporary art education, this author identified five principal problem areas, which have been further explored in the present study:-

#### 1 Art education has a direct link to "art"

Early art education was specifically the training of young artists. Now this direct link has been broken, and many more people now study art than will ever make their living from it. Nevertheless, the world of art still exerts a direct influence on art education.

#### 2 Art and art education are directly influenced by social trends

The history of art is replete with examples of the often powerful influence of external events, eg the French Revolution, or Photography.

#### 3 Art and art education need a sound philosophical base

So many movements in art have had a weak philosophical base, and have quickly faded: particularly in this century, with its plethora of trends and fashions. For effective art education a formula must be found which encompasses art, psychology, and sociology: a philosophy which is firm, yet flexible and multi-faceted.

#### 4 The production of art is cognitively rather than just emotionally driven

It is now widely accepted that individuals have different, preferred thinking and learning styles, and any teaching strategy must accept these.

#### 5 Art as a discrete subject or discipline is under threat

Eisner was later one of the prime movers in another American movement, Discipline Based Art Education (DBAE), which was developed as the response of a section of American educationalists to what they saw as the marginalisation of their subject.

This also provided some motivation for this study, though largely negative, having provoked in the author apprehension that the cure might be worse than the disease, and raising the spectre of post-Thatcherite talons sinking into the undefended and unsuspecting flanks of British art teachers. Artists are frequently being required now to justify their place in society, and in the curriculum, in terms of economic and quantitative accountability: a situation not unlike the tortoise being challenged to justify his existence to the hare, and having to prove his value by racing. The DES APU (1983 p5) also highlighted this point, that values and ability in the arts can be objectively assessed, but not by quantifiable procedures:

"... it is false to assume that artistic development can be assessed only to the extent that it is open to justification by means of scientific methodology."

The values of art and art education are not easily accountable in statistical terms, but nevertheless they are valuable. We live in what might be termed "the paradigm of probability", and much of the psychometric analysis in this study was undertaken to provide, where possible, some statistical evidence of the importance of art and art education, and to demonstrate to politicians and policy makers who seem only to understand the language of numbers, a theory of Heidegger that the truth that manifests itself in art can teach the rest of us how to see. Art is not merely a skill-based, elitist, expressivist activity, but enhances specific cognitive abilities that are vitally important for future education.

Ultimately science and art have the same philosophical aim, but approach the problem from different directions. Both strive to explain "nature" and the "human condition", the how and why of existence, through the identification of its QUALITIES, in the form of truth, beauty, understanding, relationships, etcetera. Science attempts to provide the

evidence of these qualities through objective, analytical, "quantitative" means. Why should art have to use the same procedure? Art is essentially expressive communication, the qualities it identifies are "subjective"; it is pluralistic, and yet individualistic; people respond to different aspects of the same thing. All works of art operate on different levels for different people, because as is now accepted, we bring ourselves to the work; what we see, hear or read is affected by what we are. Art does not have to prove or explain its truth, it is an act of faith. Alan Davie (1959 p27 ):-

"Art is something basically natural to man: an activity motivated by a faith in the actuality of existence which is outside and beyond knowing ... One must learn to have faith in the intuition which "knows" without knowledge."

Is this such an unacceptable statement for a society in which the foremost scientists write volumes about the first few milliseconds of existence of our universe?

There is also a changing role within the arts for each separate activity; the early cultural primacy of the visual arts which passed on to literature is now dominated by music. The visual arts must come to terms with this new peripheral role within the arts, just as art and religion have had to accept their diminished roles in a society dominated by science, technology, and politics. The arts are essentially a reaffirmation of our humanity, they remind us of the real values of life, confirming both our individuality and our relationship to society and nature in ways which are unique, and as such have a vital role to play in education.

### **1.3 General aims of this study**

This study will look at the relationship between art and art education in a social context throughout history. It will attempt to identify changes in the nature and role of art, the sources of any specific influences, and will illustrate any subsequent changes thus brought about in art education.

It will look at the nature of creative thinking, and its role in the visual arts, and attempt to

identify those aspects of creativity which enhance the production of original graphic work. It will examine the personality and cognitive abilities of art students, that is those aspects of personality and cognitive abilities which psychologists believe influence creativity, and it will consider the effects of these elements and of various teaching strategies on their creative work.

The general PHILOSOPHICAL aims of this study are:

- 1 To examine the nature and purpose of art in the context of contemporary culture.
- 2 To identify a consensus of opinion about the nature of creativity in the visual arts.
- 3 To consider the position of creativity within the future art curriculum.

The relationship between art and art education up to the present, has not necessarily involved the application of much creative ability.

The element of creativity is now much more important in society in general, and a major function of art now is as a demonstration of originality, therefore the development of creativity should be an essential part of the art curriculum.

- 4 To consider whether there are teaching strategies which are particularly effective in the development of visual creativity, and to discover which factors exert the most positive influence on the production of graphic ideas.

The general PRACTICAL aims of this study are:-

- 1 Analyse the characteristics of students who are capable of producing creative visual work, their:
  - personality
  - cognitive ability
  - special skills
  - learning style.
- 2 Compare these characteristics with those of non-art students as controls.
- 3 Identify some external influences on creative production:
  - teaching methods/styles
  - peer pressure
  - extrinsic motivation
  - environmental issues.
- 4 Conduct a practical intervention to support the conclusions of these studies.

## **1.4 Assumptions**

The general hypotheses of this study are based upon several fundamental assumptions, which are expected to be substantiated by the results.

- 1        That art is a visual summation of contemporary social values.
- 2        That there is a relationship between art and creativity.
- 3        That there is a relationship between art and art education.
- 4        That art students are creative.
- 5        That creativity should be a component of art education.

This investigation is based upon the fundamental premise that by any definition of creativity, art students are creative. Within the particular framework of this study, the lower parameter of ability of the subjects selected as "artists" is a grade A in GCSE Art, the criteria of which are a demonstration of personal perception, imagination, independence, maturity, and the ability to solve complex problems, which are quite a good match for the long established general criteria of creativity. Further to this they must all be either currently taking an A-level course in art, or have been selected for full-time study in Fine Art at a college/polytechnic/university.

## CHAPTER 2

### 2.0 CHRONOLOGY OF THE HISTORY OF ART AND ART EDUCATION

#### 2.1 Pre-History: Magdalenian, Bronze Age

"I deny that art can be taught ..." wrote Courbet in 1861: "... if their painting doesn't improve by itself, it means that nothing can be done", echoed Monet in 1915. A survey of art colleges (Madge and Weinberger 1973 p75) produced statements like; "... half the tutors and two thirds of the students at art college agreed with the proposition that art cannot be taught", and "... nobody knows how you learn to be a painter, or how you teach somebody to be a painter." These views contrast sharply with the equally firm convictions held by many art teachers on how art should be taught. Regardless of the validity of the arguments from either camp, a great many people have tried over many centuries to teach art.

Throughout the last 100 years, this controversy has provoked rigorous debate and it is apparent even now that the nature and value of art is neither agreed nor precise. This chapter considers the relationship between art and art education throughout history and will analyse the proposition that art education has always followed trends in art.

The earliest examples of the study of the history of art were largely anecdotal, 'lives of the painters' based on oral tradition rather than documentary evidence. But by the mid-nineteenth century, 'Art History' began to emerge as a separate discipline, though still making use of the general principles of historical research. The essential difference between the study of history and the study of art is that the objects still exist and can be experienced directly. Consequently, supportive data, the building blocks of history, are subsidiary to the study of art.

André Michel (1959): "A work of Art is first an 'artistic' phenomenon, secondly a historical object."

Benedetto Croce (1925): "A work of Art can be understood only in the light of its causes, which are historical; but its 'value' is determined only by its effects ... which are aesthetic."

The traditional methods of looking at the history of art, that of labelling the work of specific countries or epochs, then studying these in isolation, is a convenient but often misleading system.

Human beings rarely organise their lives into neat historical compartments, and often it is the interaction between different peoples, and cultures, that is the major influence in the evolution of a new art "style". Though there are a great many scholarly books on Egyptian and Greek art, there are none on "Social Inter-action in the Eastern Mediterranean, 2500 to 55 BC". Yet this was a particularly active period in trade and migration, and all the countries of this region had simultaneous cultures. Inconvenient though this is for academic specialists, the study of these "fallow" periods in art is often a rewarding experience, showing more clearly the origins of "new" ideas.

Another problem arising from a chronological approach to the study of art is that, like music and philosophy, art does not qualitatively "progress". It changes in response to contemporary changes in attitude, but any progression is merely numerical labelling by date. R.G.Collingwood (1924 p82) "So far as there is any observable law in collective art history it is....the law not of progress but of reaction." Certainly, in the last two hundred years changes in art have more frequently been reactions against previous ideas, rather than evolutions or developments. There have been many technological developments available to artists, often quickly adopted; and within any "school" or "style" the mode of expression quickly becomes more sophisticated; but within the accepted framework of aesthetic evaluation, few would argue that one era represents an "improvement" on another.

So, should art be evaluated by its inherent aesthetic qualities, or by its perceived social context? Should art be "evaluated" at all?

There have been two thousand years of debate so far on the visual criteria of art, with conclusions and values ever changing.

The history of the study of history is one of re-appraisal and change in the face of new



evidence and social attitudes, so it is with the study of the history of art.

Art is essentially a subjective experience, even when a group of people share it; so how can it be objectively assessed, indeed why should it? Perhaps the most effective, workable paradigm for a study of the history of art, and through that the study of art education, is a flexible, holistic method which approaches each artist within each movement with questions appropriate to that period.

The most obvious place to start this study is with the oldest known "Pre-Historic" art forms. This is also the area which has caused the art historians most difficulty and frequent embarrassment. Rene Huyghe (1959), then Director of the Louvre Museum, spelt out the dangers of taking twentieth century attitudes back into the past when confronting works of art. He then proceeded to do just that when considering the pre-historic art of France. Arnold Hauser (1950), an eminent art historian, liberally populates his account of pre-history with comments like: we know/obviously/no question/doubtless and "any other explanation is untenable"!

Even Mario Ruspoli, editor of an impressive and scholarly book on the cave of Lascaux, is guilty; after warning of the perils of ethnography, he proceeds to use these examples to prove a point he wishes to make.

Study of the art of pre-historic man has been controlled by the science of archaeology since these researchers actually discovered the paintings and sculpture. The contribution of archaeology to the extension of the caves of Altamira led to a whole "new" world of pre-Christian art being exposed.

The first theories of pre-historic life and culture were formed early this century by the French archaeologist Abbé Henri Breuil, in various books spanning 1906-1940. His opinion was that the basis of all pre-historic art was "magic"; sorcery to promote success in the hunt, or fertility to ensure procreation. These ideas fitted neatly into the contemporary image of the primitive savage, and went largely unchallenged for many years, even when faced with the grandeur of Lascaux. However, as scientists developed

more accurate dating systems, by radio-carbon and pollen analysis, the chronology of pre-historic man became clearer, and the classification of types and styles of art led to a more healthy spirit of inquiry.

This was not before some eminent men had joined the "magic" circle. Bronowski in his "Ascent of Man" (1973 p54), in one paragraph, attributes the "magic" to the animal, to the hunter, and then to the paintings.

"The obvious thing to say is that in these places (caves) the animal was magical. No doubt that is right: but magic is only a word, not an answer. In itself, magic is a word which explains nothing. It says that man believed he had power, but what power? We still want to know what the power was that the hunters got from the paintings."

This paragraph is followed by an imaginative, dramatic, and embarrassing "personal view", in which the hunter was shown the paintings and "... he felt alone with them (animals) as he would in the hunt. The moment of fear was presented to him; ...".

There is no evidence that Paleolithic Man was ever "afraid" of the animals he hunted; certainly not the animals depicted in the caves, largely horses, cattle, deer and bison.

There is also no evidence that he hunted alone, a rather pointless activity considering the weapons at his disposal; and the idea that this moment was his first confrontation with these animals is preposterous, he will have followed the hunt from childhood. Lastly, the hunters will not have "faced" the animals, the object of the hunt was to sneak up on the animal and kill it before it ran away. This "personal view" contrasts vividly with the same author's lucid exposition of Einstein's Special Theory of Relativity later in the same book.

Bronowski was not alone in this creative interpretation of the distant past. These theories were heavily influenced by the accounts by eighteenth and nineteenth century anthropologists, of contemporary primitive tribal life and customs. The wholesale transposition of the cultures of primitive tribes as complete explanations of pre-historic life is really too good to be true. However, there is an ethnographic system which

appears to fit very closely to European Paleolithic Man. French archaeologists, analysing flints, pollen, and carbon 14 (Arlette Leroi-Gourhan 1982), have produced more accurate dates for the Magdalenian period of prehistory; and when these dates are referred to known geological data for the Franco-Cantabrian region, we learn that the cave painters lived in a region with climatic conditions similar to present day Northern Canada. Study of the ethnography of the Inuit people of this region, produces more parallels with the known activities of the Magdalenian people. Both spending harsh winter months in small family units living on stored food and localised small game hunting. Then meeting in the summer at larger temporary camps for fishing, food gathering and large mammal hunting.

Though the Inuit have no large scale art their "mobiliary" art has a remarkable resemblance of Palaeolithic mobiliary. Theirs was largely an oral culture, and through the myths and legends of Eskimo history we learn of their unique attitude to animals.

Knud Rasmussen (1976 p74) reporting the stories of the Inluik Eskimos tells that:

"The greatest peril of life lies in the fact human food consists entirely of souls. All the creatures we have to kill and eat, ... have souls, souls that do not perish with the body and which must therefore be (pacified) lest they should revenge themselves on us for taking away their bodies."

The hunters had to obey strict rituals in the slaughter of the animals and give thanks to the animal for giving up its body. An extreme example of the "covenant" between primitive man and animal can be seen in the many sculptures where the roles are reversed, and the animal (frequently a bear), is eating the human. These works always include a gesture of affection between the eater and the eaten, either an embrace or a stroke. And the faces show no fear. This theme re-occurs in China (with a tiger), in South America (with a jaguar), and on the Pacific Coast of North America (with a killer whale).

Another recurring link between the primitives was the "Shaman", a person "doomed to inspiration", who is found in cultures throughout the world; and who is undoubtedly

Abbé Brueil's "Magician", carved on the walls of the Paleolithic caves. Current theories of the uses of the caves, (Leroi-Gourhan 1982 p29), are based on the idea of the cave as a scared place, a "temple" for ceremonies and the initiation of the young. Leroi-Gouhran and his associates present a vast body of archaeological evidence to support this thesis but stop short of any attempt to explain the nature of the ceremonies. Abbé Brueil and his followers had no such inhibitions. Their mistake was in approaching the artwork with twentieth century attitudes.

When the first Palaeolithic objects were found, they were attributed to the Celts; and when the first caves were discovered in 1879 reports on their contents and the quality of the work were ignored for over twenty years. The contemporary attitude to the cave art of Altamira was eloquently expressed by Ruspoli (1987 p79):-

"Official salon-tested art of the last century was restricted by its Western historical preconceptions - tempered though these were by a certain admiration for Pharaonic Egypt or the refinement of China. It could hardly be expected to take to its heart what were believed to be infantile scrawlings. How could these antediluvian ancestors, whom Darwin had said were descended from monkeys and who were imagined as half-naked, covered in hair or rolled up in bear-skins with armholes cut in them, have any claim to be considered proper artists?"

This attitude is difficult to accept now that the content of caves like Lascaux have been thoroughly documented and photographed. The sheer scale of the project is overwhelming, and the expressive quality and vitality of the work stands comparison with the art of any subsequent period. In Lascaux many of the individual paintings are over twenty feet in length, on walls and ceilings so high that scaffolding thirteen feet high had to be erected before work could begin. One small gallery, the "Apse", contains 450 individual paintings of animals. Perhaps a reasonable comparison would be Michelangelo's Sistine Chapel.

The sheer quality of the work of the Magdalenians tells us that the artists were "professionals". Their paintings are a mixture of careful observation and stylistic mannerisms fused in a lively cohesive form. The spread of these "styles" throughout the

area occupied during this period indicated some form of art tradition and thus some form of art education. This is confirmed by the finding of a number of sketches of animals, carved on small stones. Exact replicas of the basic forms of animals in the caves.

Further evidence is available following chemical analysis of the pigments used to colour the paintings (Courard & Laming-Emporaire (1979) in Ruspoli p193)), showing the wide geological area from which the minerals must have been obtained; and their obvious value. The importance of these pigments is supported by ethnographic studies of primitive tribes which emphasise the status of the "Keeper of the Colours".

So it seems probable that the continuity of art production was maintained through localised instruction within the "family" group through some form of apprenticeship, and spread throughout the groups by some form of exchange by association or informal guild.

This idea is supported by Hauser (1950 p17):

"... works done ... by trained specialists who had spent a considerable part of their life learning and practicing their art ... The many sketches, rough drafts and corrected 'pupil drawings' found ... makes it seem highly probable that theirs was an organised educational activity at work."

and also by Huyghe (1950 p124):

"... a pebble found at Ain ... with a drawing of a bison from the Dordogne, ... an exact replica of a beast at Altamira. Obviously, prehistoric artists formed something like schools, each with its own repertoire of drawings ... and formulas for these drawings served as models for local artists".

Unfortunately he spoils his 'proof' with his explanation of an unfinished drawing of a stag at Limeuil as being due to the artist having misplaced his 'crib sheet'.

Much of the research in the field of Paleolithic Art has centred on the establishment of an accurate chronology of the period, and whilst this work is undoubtedly important, it has hindered thoughts on the interpretation of the artwork. The problem is rooted in modern man's conception (obsession?) with Time as a linear sequence or progression. The lives of primitive tribes are governed by the seasons of nature, which are cyclical. Their smallest division of time is a "moon". In their mythology the past, the present and the

future are all parts of the same entity, echoes of some current theories of modern physics.

Bronowski (1973 p256): "... Einstein joined light to time ..."

Hawking (1988 p152): "... the laws of science do not distinguish between the forward and backward directions of time."

Davies (1987 p198): "... the new paradigm (of science) transforms our view of time. Physical systems can display unidirectional change ..."

The superimposed images of Palaeolithic art are those which have caused historians most confusion, pre-conditioned by modern concepts of pictorial space and sequential time we find it difficult to consider these works in their original context.

The Magdalenians lived in small semi-nomadic tribes scattered across vast areas of land. No evidence of violence, or tribal struggles, or warfare has been found. So despite the inhospitable climatic conditions they seem to have enjoyed a freedom and contentment which is reflected in their art. However, the major geographic changes which followed the end of the "Wurm" glaciation (approximately 15,000 BC), were to end their culture. The ice retreated slowly north and as the temperature and the rainfall increased, they had a profound effect on the flora and fauna of southern Europe. Before the ice had reached its present level, by about 8,000 BC, Europe had been transformed. Sea levels had risen, flooding old sites and creating "new" islands like Britain; vast, dense and varied forests had grown, and many of the traditional animals moved away.

With diversification of the tribes during this period, the production of large scale "permanent" art works died out. This form of community art was not seen again for several thousand years when, following the development of agriculture in about 8,000 BC in the Near/Middle East, settlements grew and became permanent. The earliest of these large settlements were Jericho in Jordan, Catal Huyuk in Turkey and Jarmo in Iraq. These towns were impressive, large scale, brick structures, and the wall paintings in Catal Huyuk, dating from about 6,000 BC, were the first ever paintings on a prepared flat

surface. So began the documented chronology of "Civilisation" with all its fantastic cultural and scientific achievements and its catastrophic social problems.

### **2.11 Mediterranean Civilisations: Egypt, Greece, Rome**

All these civilised nations grew up along the great river basins which provide fertile agriculture and ease of communication. The most enduring of these cultures and the most significant artistically was that of Egypt. The perfection of craftsmanship, the manipulation and control of the most difficult materials, and the consistent formalised symbolism of its images are the hallmarks of Egyptian art. They are the products of a stable, hierarchic society which apparently changed very little in over 2,000 years. There were in fact quite significant political changes; invasions, changes of rulers etc, but the core of Egyptian life, its religion, remained strong and resisted all external pressures. And as art was the servant of religion it also remained resistant to outside influences and showed little stylistic change.

Scholarship in the study of Egyptian art seems to operate on two basic levels:-

- a) - acceptance of the general principles on a simplistic level, ...that the Egyptians conveyed what they knew, not what they saw.
- b) - using explanations of Egyptian religions, culture, and political history as justification of the nature of their art.

The danger for the student of Egyptian art is similar to that of pre-history, approaching the subject from a twentieth century view. Aldred (1980 p11) highlights the problem:

"Art, in the sense in which that word is generally employed today, did not exist in ancient Egypt, ..."

This is a commonly held fallacy among historians. Art exists only within the context and conventions of its own time, and although the conventions of Egyptian art were restrictive, they were not more so than those of medieval Europe, and certainly not more so than those of post-war abstract painters. Aldred then compounds the problem by

excusing the Egyptians' lack of imaginative expression by invoking the secondary definition of art as "skill in execution", then saying that this was the real aim of Egyptian art. Whilst it is true that the social status of artists in Egypt was low and they were required to produce work of consistent technical mastery, that is a long way from saying that they were unimaginative.

Honour and Fleming (1990), emphasising the intellectual "canons" of Egyptian art state that the "artistic" results were unintentional. Even P.H. Newby (1983 p10), in his affectionate study of Egypt, explains this 'stereotyping' by claiming that appreciation of their art depends on understanding the nature of Egyptian civilisation. Both these statements are open to contention. All artists use intelligence and technique, but great artists transcend these skills. As a young boy the author was enthralled by the visual qualities of Egyptian art long before he knew anything about the structure of their civilisation.

The only serious attempt to analyse the "aesthetic" elements in Egyptian art was by the German archaeologist Heinrich Schäfer (1919, then revised and translated into English in 1974). Schäfer's aim was:-

"... to point to what anyone intending to study the history of Egyptian art would have to clarify in his mind before he set to work."

The result was a detailed, objective study of the principles of Egyptian art, and the rules of transformation for understanding its symbolism. Unfortunately, he does not stop there: he goes on to lecture his audience at some length with his views on child art, greek art, modern art, psychology and their relationship to Egypt. As he is neither teacher, artist nor psychologist, his views do not carry quite the same academic weight as his historical analysis; especially as he is prone to contradictions. Concluding his work with:-

"... Egyptian art is ... a fundamentally alien rendering of nature."

"... the works are not the expression of the aesthetic instinct."(p340)

after having started with:-



"The Egyptians were the first to be aware of the nobility of the human form, and to express it in art. Their portrayal is not incompetence but vitality and confidence in life."

"... aesthetic impulses were the genesis of Egyptian art."

"Some artists revel in the beauty of their lines."

"... work created in joy for their own artistic instruction." (p16)

Schäfer himself (p17) gave us the translation of the Egyptian word for sculptor,

"He who keeps alive".

Criticism of this book is never directed at the pictorial analysis undertaken, but largely at his viewpoint of the wider issues. As explained by Ernst Gombrich in the foreword (pIX):

"Possibly (Schäfer) was here debarred from further progress by the intellectual tradition which he inherited and to which he adhered to the end ... he thought in terms of polarities or fundamental opposition."

and John Baines, his translator (pXI):

"... it (the book) is primarily directed at a German audience ... seldom cites non-German literature, and draws heavily on Goethe ..."

This may be so, but all subsequent writers on Egyptian Art have used this work as their essential source material, and have repeated his basic thesis, summarised by Baines:-

"... which appears to be as valid now as when it first appeared (in 1919)."

"... its fundamental idea, that Egyptian artists ... construct their representations ... to summarise the essential physical character of the objects ... as opposed to their appearance."

This viewpoint is fatally flawed, it represents Egyptian Art as merely formulaic. When looked at from the position of an artist, not an historian or archaeologist, and approaching the works as art objects not historical documents, Egyptian Art represents a massive challenge, brilliantly solved.

Work may be commissioned by the church or Royal patronage, but the real aesthetic decisions are made by artists. Convention may dictate that the head must be shown in profile, and the eye must be seen frontally; but there are still a thousand of ways of getting it wrong! Tradition grows out of what has been popular and successful in the

past.

An alternative thesis is that Egyptian artists expressed their creative abilities and aesthetic judgement in spite of the formal restrictions imposed on them. The real essence of Egyptian Art is not the superficial modes of expression denoted by Schäfer, but the visual dynamics of expression, line, form, relationship, and composition; problems which were all confronted and inventively solved by the artists of the time. Also many paintings contain informal and relaxed elements reminiscent of Henri Matisse.

The Egyptian way of life was governed by rules and regulations and with its polytheist religion, there was a regular demand for sectarian artwork. The demands of the priesthood for products of high technical skill was instrumental in the development of a formalised system of art education. Hauser (1951 p30):-

"The fact that from the beginning there existed universally binding rules, ... models, and methods of work, points to a system directed from only a few centres."

"... the care and skill the Egyptians expended on the education ... of young artists is shown by the teaching materials which have been preserved. The plaster casts from nature, the anatomical representations of parts of the body, and the specimens showing ... the development of a work in all phases of its production."

Our knowledge of the teaching of "art" in Egypt is derived from the study of found objects, reliefs and paintings of artists at work, and the excavation of the ruins of artists' studios. We can also infer from the objects produced, many of the methods used.

Art education in Egypt was essentially "training", the acquisition and development of production skills. Students first learned the "craft" of art, whilst aesthetic values were very much pre-determined by tradition. These craft skills were nevertheless production techniques of a very high order, and in view of the tools available were quite ingenious. Egyptian artist-craftsmen could carve a variety of woods, in relief or in the round; beat and cast metals; use "cartoons" to enlarge ideas for paintings or sculpture; and carve a whole range of local stone. Their technique for carving granite was to heat the stone by fire, quench with cold water, then chip away with flints, thereby achieving a good finish

in a remarkably short time.

The general division of the study of art history separates Egypt and Greece as distinct and sequential cultures. This is very much a false impression. Egypt was a rich and fertile land, and attracted many visitors and migrant workers.

Trade between the countries of the eastern Mediterranean had been established for many centuries before the rise of Greece. Archaeologists have found many examples of exchange goods and artefacts in all the countries of this area. The exchange of cultures is a little less obvious, but considerable evidence has been found. Schäfer (p348) reports of Greek sculptors working at Heliopolis in the Nile delta, and quotes:-

Diodoras:- "They say that the most distinguished of the ancient sculptors, Telecles and Theodoras ... spent some time with them (Egyptians) ... They constructed the statue of Apollo ... This method of construction is nowhere practised among the Greeks, but among the Egyptians it is of common occurrence."

Plato:- "It appears that among them (Egyptians) this principle ... was recognised long ago, that the young people in the cities ought regularly to study fine figures."

When describing the early Archaic sculptures of Greece, Richter (1959 p56) also states:

"... the earliest ... statues of Greece testify to the inspiration she received from the East."

"... in the stances and general appearance the borrowings from Egypt ... are evident."

"the scheme is the same as that used in Egypt, ..."

At the same time as Egyptian civilisation was beginning to evolve, Neolithic Man, who had settled on the islands in the Aegean Sea, developed a separate Bronze Age culture. The earliest evidence of this independent Aegean art comes in the form of the white marble statuettes found in the Cycladic Islands.

The Early Bronze Age continued many of the sculptural traditions of Neolithic art. These pre-historic statuettes or "idols" are in the form of stylised figures, not recognisable as specific human or divine beings. Yet they constitute the most significant evidence

available for the study of the religion and art of this period. The works evolved slowly from the Neolithic anthropomorphic idols to the more naturalistic detailed figures of the Bronze Age. From this time onwards the figures developed through a process of harmonisation and simplification into the "canonic" style, which is most associated with the Cycladic Islands. Production continued here for several centuries and the statuettes were exported to all parts of mainland Greece and Crete.

The reasons for the development of a particular art form in one specific area are sometimes quite arbitrary, for example the convenient supply of raw material, as in the pottery region of Stoke on Trent; and this was probably the case in the sculpture of the Cyclades. Pat Getz-Preziosi (1977 p71):

"It was the sea which first revealed to the prehistoric inhabitants of the Cycades the beauty of their island marble. Still today a traveller will be fascinated by the natural forms and gleaming white surface of the pebbles washed up on Cycladic beaches. Many of these pebbles are, curiously, shaped like some of the simple schematic figurines found in Early Cycladic graves, ..."

It is probable that these "beach marbles" were used as the basis of the early sculptures since a minimum of shaping and cutting would be required, an important point considering the primitive nature of the tools available at that time. Getz-Preziosi also identified a "drawing kit" used in the planning stage of figure production:- a straight edge, a compass, and a device for determining angles. Having measured several hundred of the sculptures she has identified a system of standardised proportions, usually strictly adhered to, which bear little resemblance to natural human proportions; and which contains the repetition of certain angles derived from a rectangle based on a ratio of 5:8. This rectangle forms the basis of much of Early Dynastic Egyptian and also Aegean architecture. A schema of the angles of this rectangle also shows close affinity to some Minoan masons' marks which are related to the double-axe sign found in Cretan palaces (Appendix 2.1).

The elements of formalised representation, which are mathematically based, and the

localised centres of production suggest a system of art education, probably family-based apprenticeships. This idea has the support of Getz-Preziosi, Renfrew, Jurgen Thimme, and R. M. Cook.

Further evidence for the form of art education comes from study of the more sophisticated "Seated Musician" figures (circa 2,700 BC), which on analysis correspond to a "cartoon" grid four units high by three units wide.

Getz-Preziosi has identified the work of several individual artists who worked on the island of Naxos in the centre of the group. These artists showed their individuality and refinement in the developing proficiency of their work, and demonstrated their aesthetic urge even within a strict and formal code.

The issue of international trade and travel has received a lot of attention from historians, and is of vital importance in the analysis of the spread of cultural ideas. Snagmester (1975) and Hockmann (1977) both studied trade in the Mediterranean, Hockmann in particular studied the travels of the Cycladic islanders.

"They supplied the coastal peoples of the Aegean with obsidian (a volcanic glass) ... much in demand as a material for cutting implements."  
"These explorers founded "colonies" ... contrasting sharply with those of the local people." (p74)

Saggs (1989 p137):

"... unquestionably trade was a vehicle for cultural influence. Navigation between Egypt and Crete would have presented little difficulty (favourable currents and wind)."

Cherry (1987 p25):-

"... the Cycladic Islands have a prominent place in the "international spirit" of 3,000 BC."

Around 2,000 BC the civilisation we know as Minoan, on the island of Crete, began to dominate life in the Aegean. Excavations of tombs on the island show immigration from Asia Minor, Lybia and Egypt. As the population grew and thrived on this rich and fertile island a unique culture developed, aided by an hedonistic attitude to life and an apparent

lack of territorial aggression. The Cretans built magnificent palaces for their Kings, and when these were destroyed by earthquakes, rebuilt them on an even grander scale. They also developed literature, evolving from the earliest hieroglyphs scratched on clay tablets, to a linear script which flourished until the destructions of 1450 BC, which ended forever one of the great civilisations of antiquity.

The religious beliefs of early cultures are always an important factor in the production of works of art. Establishment of the nature of religion on Crete proved to be a major problem for archaeologists. Peter Warren (1987 p32), sifting through 85 years of research, concluded:

"... it seems clear that "religious" beliefs were an indivisible element of living (in Crete) ..."

"... divinity was perceived in some sort of anthropomorphic sense."

"In (our) secularised, intellectually compartmentalised, capitalist societies, or in desanctified socialist regimes the point is perhaps worth stressing."

The contents of Minoan religious sites, in mountains, caves and sanctuary rooms; and the iconography of the cult scenes, point to a unified "female" divinity. This theory is supported by Rutkowski (1986 p52):

"It is likely that in the earliest times only a goddess was worshipped."

This point was taken up by the feminist writer Muriel Hilson (1991), who chastises many male historians for ignoring the importance of women in primitive society; and D.O. Cameron (1981), who translated the Minoan "Bulls Head" symbol into the female uterus and fallopian tubes. Both these viewpoints arise from the early schematic representations of the Bull/Uterus image; called Bull because of the frequency of bulls in later works, or Uterus because of the symbolism of birth and regeneration (Appendix 2.2).

Similar problems of interpretation surround the other Cretan symbol, the "Double-Axe" found on the walls of the palace of King Minos at Knossos. This palace is built on the site of the legendary Minotaur's "Labyrinth", a word translated by many scholars as the "Palace of the Double-Axe". Some of the Cycladic scholars offer the symbol as a

masonic mark based on the angles and proportions of the buildings.

The art of the Minoans of Crete has a basically religious theme, fused with humanity and nature, characterised by a lack of formality and an abundance of organic decoration.

There is a total lack of large scale stone sculpture on the island, so we know their work largely through their paintings. There had been a revival of interest in painting throughout the Middle East in the second millennium BC, and early Minoan work reflects many of the conventions of the Egyptian, like profile figures with full eyes, and the frontal viewpoint. They lack the intellectual rigour of Egypt but in its place they showed a naturalistic freshness, with figures in movement, frozen momentarily, painted with a loose and impressionistic technique. Adjectives frequently used to describe these works include; buoyant, carefree, exuberant, joyful, lively, sprightly, uninhibited and vital; to name but a few. They reflect an obvious hedonistic pleasure in expressing the excitement of the games, court life and the beauty of nature.

The Minoan painters were also innovative in their technique, working on true "frescoes", described by Powell (1973 p52):

"The wall was covered in two layers of lime plaster, the design was then sketched in with orange-red paint and in turn covered with another layer of plaster to which the colours were applied."

The sheer scale of some of these frescoes tells us that they were the work of teams of artists, but no plans, sketches or cartoons have survived: and no artists' studios or workshops have been found, which would demonstrate their teaching methods. Indeed, the trauma which affected the island in 1450 BC so shattered the frescoes that what we know now is the result of major reconstruction in the form of giant jigsaw puzzles.

Another significant problem with the study of art on Crete is that shortly after the destructions of 1450 BC, the island was re-occupied from mainland Greece, so there is evidence of another culture almost as old as the Minoan.

The earlier civilisation of mainland Greece is normally called Mycenaean or Helladic,

and consisted of a number of small independent states or kingdoms, of fierce aggressive peoples who were frequently at war with each other. They lived within a stratified social system, described by their literature on the surviving "Linear B" tablets. Their main contribution to the arts of the region were architectural, the tombs of their royalty, and massive citadel fortresses surrounding the palaces. It is the scale rather than the subtlety of their building that is so impressive. The outer wall of the citadel of Mycenae is over a mile in circumference, and the lintel over the doorway of the Treasury is estimated to weigh 120 tons. The Mycenaean civilisation survived only for about two hundred years before a series of wars and economic disasters led to an invasion by the Dorians from the north.

From about 1100 BC, for three hundred years, Greek culture entered what is known as the "Dark Age", not only because the later Greeks knew so little about it, but equally what is known of it archaeologically shows an age of depopulation, poverty and isolation: depressed conditions from which they slowly emerged after re-establishing relations with the East.

The study of this formative period, 1100 to 700 BC, is still very much in its infancy, but the picture that is emerging is one of a native community re-establishing itself by building a network of trading contact with the rest of Greece, the Near/Middle East, and Egypt. Throughout the seventh and sixth centuries BC, enthusiasm for colonisation increased, establishing trading settlements in Cyprus, Sicily and Southern Italy. This brought a return of prosperity and peace to Greece, and a consequential increase in population. In the particularly fertile areas, great cities evolved, like Athens, Corinth and Sparta. They were strong in trade and manufacturing, but it was in the cities on the coast of Asia Minor that the great cultural revolution took place.

Beginning with their adaptation of the Phoenician alphabet, early Greek philosophers began to analyse and question "nature", breaking down the mythological origins of the past and beginning a culture that was to dominate the arts of the western world.



The steady exchange of goods, crafts and ideas with the countries of the East acted as an initial stimulus to the artists of Greece who assimilated selected ideas, inspired by the spirit of inquiry. Boardman (1986 p283) analysed the influence of Egypt:

"In Egypt, Greeks of the mid seventh century BC ... saw colossal works of hard stone, ... and returned to exploit the fine, white marble of their island quarries ..."

"Egypt also taught the Greeks about the use of stone for columns and architectural ornaments."

Although Athens became the major cultural centre of archaic Greece, all the cities had studio workshops for most art media. The tradition of sculpture in Athens developed largely because of the Athenian practice of using marble monuments as gravestones in their cemeteries. Their early work carried on many of the conventions of Egypt, particularly "frontality", the viewing of a sculpture from a fixed point. Athenian sculpture changed this by developing from a 'formula' of representation to a system based on appearances, from direct observation of the human form. The increasing wealth of Athens also stimulated production of commemorative statues, dedicated to the success of "individuals", athletes or warriors; albeit in an idealised form. The architectural setting of these works indirectly provided a third stimulus; the works were to be viewed in the round.

Though sculpture was the major plastic art form in Greece our knowledge of it is poor. Few of its finest works survive. Most of our study is based on Roman copies which are identified with the originals by the writers of the time. In spite of these problems we are now aware of another Greek innovation, the individual artist as a "master", acknowledged in his lifetime and influencing trends in his art form. Sculpture produced five such masters, three of whom were contemporaries in the fifth century BC, Myron, Polyclitus and Phidias; and two in the fourth century, Praxiteles and Lysippus. But the study of these masters is not quite as straightforward as it might seem. Seltman (1948 p87) outlined the problem:

"Let us imagine what might be a parallel case. Michelangelo was at work

on the ceiling of the Sistine Chapel between 1508 and 1512. Forty years later Giorgio of Mantua published a number of engravings of the Prophets and Sibyls. About two hundred and fifty years later, one Tomaso Piroli, made other engravings of the same figures.

Now if the Sistine Chapel had been destroyed by fire and no prints of either the Mantuan or Pirolian engravings had survived, but if we had some poor French woodcuts after the Mantuan and some third-rate English engravings after Piroli, how much should we really know of the incomparable grandeur of the originals?

That is how we stand to Lysippus. Of his own style, of his characteristic mannerisms, of his powers as a modeller we know nothing."

Between them, these men and their followers were responsible for Greek art's major contribution to, and influence on, the future of European art, changing the basis of art from the symbolism and religious dependence of the past to a "humanist" art form, based on observation of nature, expression of the human condition, and decisions made from "aesthetic" principles. Art produced not quite yet for art's sake, but certainly for contemplation; and for the satisfaction of the artist himself.

Of course the plastic artists did not work in isolation; they were part of a great cultural revolution which took place over two hundred years, producing equivalent changes in literature, theatre, music, science, politics, but principally in philosophy. For it was the evolution of philosophical thinking which underpinned all the social and artistic changes in Greece. Western philosophy emerged in Greece in the sixth century BC, though these early philosophers concerned themselves principally with theories of the natural world rather than theories of beauty and art. They saw contrasts between the arts that are unknown in modern thought, and did not acknowledge artistic creativity or aesthetic experience. The arts themselves were divided by the Greeks into two factions, the Expressive (poetry, music, dance, theatre) linked to ritual, and the Constructive (architecture, sculpture, painting) to produce objects for viewing.

To add to the confusion we have problems with the interpretation of important words. For example, the word "mimesis" or imitation, in Archaic art means to "express feelings" and in later Classic art the "illustration of reality" through art. We meet similar problems

with the word "kalon" or beauty, the Greeks had no term to define "fine art", and the Delphic oracle stated that "... the most "just" is the most beautiful".

Even the writings of the artists themselves (all lost), by repute, consisted largely of discussion about laws of symmetry and canons of art. The Greeks took it for granted that nature and the human body in particular, display mathematically defined proportions. These proportions were in reality those of an "ideal" well built man, whose body could be contained within the simple geometric figures of the circle and square. These ideas of the mathematical nature of nature, were derived from the philosophical writings of Pythagoras and Plato; and the artists saw themselves as applying and revealing the laws which govern nature. They regarded these "canons" as discoveries not inventions, as objective truths rather than human inventions.

These ideas were neatly summarised by Tatarkiewicz (1970 Vol 1 p74):

"... (though) ... taste, proportions, art and aesthetics are subject to fluctuation. Classical Greek art was the product of an aesthetics which equated perfect forms with natural forms and perfect proportions with organic proportions."

"It was based upon the conviction that objective beauty and ... proportions existed. It apprehended these proportions mathematically, ... that objective beauty depended on number and measure ... yet .. this aesthetic left sufficient "freedom" for an artist to express his art individually."

The "Classical" period of art in Greece was not immutable, and was itself subject to considerable change. The fourth century BC saw an increase in richness, decoration, movement and emotion', but most significantly in the work and words of Lysippus, "Until now men have been represented as they "are", but I represent them as they "seem" to be". This attitude marked the end of "objective" beauty and the beginning of the "subjective" selections of the artists themselves.

Though we know Greek architecture by its ruins, and sculpture mainly through copies, what we know of painting comes from writings. Fortunately these writings also give us our only descriptive information about the teaching of art in Greece.

R.M. Cook (1976 p20) reports:

"In general training was in the workshop, though in the fourth century we hear exceptionally of a private school of painting; but normally an assistant worked his way up as best he could."

Though the usual system of art education was by apprenticeship to an acknowledged master, Xenophon described a "school" at Sicyon near Corinth, which included arithmetic and geometry in the curriculum, and produced a number of talented pupils. He also tells that drawing and painting became recognised subjects in the education of local boys.

The general chronology of art now moves across the Adriatic to Italy, following the next great political power, Rome. This apparently simple step has caused still more problems for the scholars. When does Greek art end? When does Roman art begin? Is the art produced in Rome, Roman?

It is perhaps sensible to look at the accepted historical evidence first. It was the Greeks who colonised southern Italy, whilst in northern Italy, the Etruscans had a developed civilisation from 750BC, and it was they who actually founded the city of Rome. Werner Keller (1975) admonished earlier historians for their neglect of the Etruscans, calling their picture of antiquity biased and incomplete, and proposed the thesis that it was the Etruscans who created civilisation in Italy and laid the foundation for the evolution of European culture. This brings him into dispute with Seltman (1948), who thought that the early Etruscans adopted east Greek art-forms without understanding; and later Etruscans produced degraded imitations of Hellenistic art. What is not in dispute however is that fact that the Etruscans, whatever their actual influence, were eventually politically obliterated by the Romans. In much the same way as the Greeks were finally made impotent after their unfortunate alliance with the Carthaginians.

Chronologically the Greeks and Romans co-existed; in simple terms the Greeks blossomed early and the Romans who were slow to develop, lasted longer. The

demarcations are difficult to decipher. Toynbee (1934 pXX):

"... there was no truly Roman art ... what we are accustomed to term "Roman" art is not the art of the Roman people ...! it is Greek art in the Imperial phase."

Wilson (1986) gives an explanation of the source of the confusion:

"The reign of Augustus (30 BC to 14 AD) was an age of enormous architectural and artistic fervour, ... (He) ...provided a motivated patronage which drew architects, sculptors and painters to the capital."  
"... an army of Greek craftsmen were drafted into (Rome)."

Rawson (1986) provides further evidence about social integration:

"Co-operation between the Greek and Roman elites was possible because the Roman upper class ... became very Hellenized. Indeed there were attempts to prove that the Romans were Greeks ..."  
"Some scholars held that Latin was a dialect of Greek."

So it is clear that most of the art produced during the Roman dominance of Mediterranean culture is labelled "Roman" because of its chronology rather than its style. Wheeler (1964 p159) claimed that Roman art was variously the product of a group of creative centres, including Alexandria, Antioch, Athens and Rome itself, and he described it as:-

"It is a clumsy symbol for the composite effort of minds ranging from the Atlantic mists to the hard sunlight of Asia, and through a changing complex of ideas, from the comfortable fruition of Hellenism to the uneasy aspiration of the Middle Ages.  
It is valid only in so far as it represents an epoch ..."

However, regardless of the labels ascribed to their art, three principal themes were developed by the Romans during the six hundred years from 300 BC to 330 AD; portraiture, narrative and landscape.

From the fourth century BC in Greece, the cult of the individual had become an important theme in philosophy, politics and religion. When this trend arrived in Rome it met a people who were already involved in keeping alive the image of a person through a

system of storing death masks in the "halls of their ancestors". The movement in sculpture away from the "idealised form" towards representation of a particular individual, began with the statues of Alexander the Great, and was adapted as image-making propaganda for Augustus. Greek sculptors were employed to produce a series of idealised portraits of the Emperor which were copied in vast numbers and distributed throughout the empire. These were, in the words of Wilson, "... a delicate blend of realism and statesmanly ideal". By the first century AD domestic portraiture had developed and become almost callously realistic, for the Roman portraitist was no flatterer. This trend was also perhaps influenced by a change in patronage, with the rise of a prosperous merchant class well able to afford the skills of a competent craftsman, but unlikely to value portrayal as some fading deity above an accurate portrait of themselves. These artists left a legacy of revealing images of the people of the Roman Empire. By the second century AD it is also clear from the identity of some of the portrait subjects, that the artists, like some earlier Egyptians, had begun to include people who interested them as subjects and not just as patrons. This trend was to disappear for over a thousand years.

The Romans also added a "documentary" dimension to the narrative portrayal of great historical events. They were "bookkeepers" in comparison to the poets of Greece, photographers compared to the Greek painters; interested more in realism than in the allegoric Greek representation, with its gods, giants and demons. Wheeler attributes much of the influence behind this "factual" style to the expression of the personality cult of whichever Emperor ruled at that time. The other great innovation (not really an innovation more a renaissance) also occurred during the reign of Augustus (27 BC - 14 AD) and was described by Pliny (23 - 79 AD), (N H XXXV, 16) as:-

"The introduction of the pleasant fashion of painting walls with pictures of country-houses and porticos, landscape gardens, groves, hills, fish-ponds, canals, rivers, coasts ... with sketches of people going for a stroll or sailing"

Though this description was not written until some years after the reign of Augustus, the

quality of these paintings was demonstrated by the examples recovered from Pompeii and Herculaneum; described by Wheeler as having something of "the age of Corot", then later as "a sense of light and space ... reminiscent of Augustus John", and by Berenson (1960), "Pomegranates as Renoir painted them". To add to this list, there is a dramatic mosaic from Hadrian's villa at Tivoli (c 130 AD) of a lion attacking a bull, which is "reminiscent" of Delacroix's paintings of similar themes. The international and eclectic nature of Roman art makes any formalised system of art education most unlikely. Though from the high levels of skill and often formal styles of representation, there were obviously artists' workshops for the training of apprentices. For a while the issue of spatial representation in art appeared again, but the problem of structural perspective as a framework was never really solved, despite the earlier work of Greek stage designers, and the writings of Vitruvius in the first century BC:-

"... a certain spot should be determined as the centre in respect of the line of sight and the convergence of lines, and we should follow these lines in accordance with a natural law, so that the appearance of buildings ... and simple plane surfaces may seem in some cases receding, and in others projecting."

There is a wall-painting in the Villa of the Mysteries at Pompeii (therefore before 79AD), which shows the interior of a palace with the columns, arches and wall panels diminishing in perspective, and is a clear expression of this particular artist's control of spatial representation.

Although Classical art had a profound liberating effect on the physical properties of art and the role of the artist, its main legacy for the future of art was through its establishment of a philosophical language for debate and analysis, and its clarification of criteria for the evaluation of art.

## **2.12 Christianity: Byzantine, Carolinian**

This freedom of expression of the arts, hard-won by the classical scholars, was to founder on the twin rocks of "barbarism" and "Christianity". Though the barbarians captured

Rome and broke up the Empire. Chadwick (1986) claims that by 400 AD, the capture of European society had been achieved by the Church. The 'Edict of Milan' in 313AD had ended the persecution of Christians and brought a vast increase in the number of followers and therefore in the power of the church establishment.

On Monday 11 May, 330AD, the Roman Emperor Constantine renamed the Greek city of Byzantium as "Constantinople", and marked the beginning of the civilisation we call Byzantine, which was to dominate Europe for more than eleven centuries. The qualities of Byzantine culture which are so appreciated today were not always so popular. W.E.H. Lecky (1869) wrote:

"There has been no other enduring civilisation so absolutely destitute of all the forms and elements of greatness."

This was only part of a long campaign of denigration begun by eighteenth century historians after Gibbon. Only after 1945 did scholars really begin to reappraise the Byzantine era. This period was full of scholarship with the culture of the ancient world kept alive by the copyists of Constantinople. The Imperial library was filled with copies of ancient manuscripts and Hellenistic scientific theories. It was a period of religious controversy, with many arguments about the true nature of Christ and his Church; and it was a period of artistic intensity, with art the servant of the church, but infused with a depth of spirituality.

Religions of earlier times had been quite content to produce images or idols of their deities and worship these symbols. With the advent of Christian theology, however, and its single universal God, it became an important issue to establish whether or not the visual representation of God was possible and if so should it be allowed. Jews and Muslims were against such practices, Hindus and Buddhists saw no objection; Christianity never quite made up its mind. This alternating current of Christian opinion was to cause havoc with the lives as well as the art of the people from 726 AD onwards. Since the beginning of the eighth century the cult of "Icons" had been steadily growing to



the point where holy images were openly worshipped in their own right. Under pressure from Muslim and Jewish influences, and from many of his own Christian bishops, in 726 Emperor Leo III imposed the edict of "Iconoclasm", and personally ordered the destruction of the vast gold icon of Christ which stood above the gateway to the Imperial palace. When news of the desecration spread, there were demonstrations and mutinies throughout the western provinces of the Empire. To the western Christian who loved and revered their images, many of which had been seen to work miracles in the past, "iconoclasm" meant wilful sacrilege.

All holy pictures had to be destroyed, and anyone who failed to obey was subject to arrest and punishment. Many of the monks fled, taking their small icons with them.

Meanwhile in the west Pope Gregory issued a public condemnation of iconoclasm and set out the Church's orthodox view of images. Unfortunately this had little influence in the east, and in 745 AD Leo's successor, Constantine V convened an Ecumenical Council which produce the statement described by Norwich (1988 p361):

"... that Christ was divine and as such "aperigraptos" ... not circumscribable, and as a consequence not able to be represented by the limits of a figure within a finite space ... the images of the Virgin and the saints were heathen idolatry and thus equally subject to be condemned."

Thousands of Christians, mostly monks, were subjected to atrocity and martyrdom before another council, set up in 786 AD by the Empress Irene who replaced the Iconoclast Edict with a new doctrine on the general desirability of images. She believed that the more these images are seen through art, the more the spectator will remember and love the originals, ie the Holy Family. These findings were in their turn repudiated 25 years later when holy images were again subject to vilification. It was only after 843 AD with the final defeat of iconoclasm, that the production of large scale religious art resumed.

The most significant political event of this period occurred on Christmas Day 800 AD in Rome, when Charles, King of the Franks, "a jumped-up barbarian chieftain" was crowned Emperor of the Romans. This divided the old Empire and led towards a new cultural and

spiritual force, the Holy Roman Empire, centred on the power of the Pope and his Church.

The Coronation of Charlemagne as the first northern emperor is now seen as symbolic of the shift of the balance of power in Europe from south to north which was one of the most important developments of the early Middle Ages. Contemporary accounts of the event differ, and we still do not know if it was initiated by Charlemagne to acquire the ultimate title, or if it was a plot by Pope Leo to reinforce the waning power of the Church. Charlemagne was a remarkable and tireless general who had campaigned successfully for over thirty years; but for the purpose of this study his most important act was the "Admonition Generalis" of 789, which stressed the importance of education for both clergy and the people, and urged the establishment of schools for both. It was here that the first British contribution to art education occurs. Alcuin, the Archbishop of York, was the Head of the Palace School at Aachen, and was appointed Charlemagne's chief cultural advisor. He was obviously highly thought of, for he criticised his master on a number of important issues without any drastic repercussions.

The church at this time was obliged to give authoritative pronouncements on the arts.

Alcuin's have been translated by Tartariewicz (1970 Vol 2 p92-5):

"What is easier than to love beauty of form, ... and things nice to touch."

"Neither the materials of a picture nor the talent of the artist have anything holy in them ... the Virgin is depicted with the same pigment as the animals."

"Pictures consist of lines, colours and shapes arranged in such a way as to enchant the beholder, but their real worth (dignitas) lies in their meaning, and the things depicted by them."

"Art is autonomous, but the artist must portray what is true."

The spread of Christianity in the north was hindered by problems with language, Spoken Latin had diverged so far from written Latin that accurate comprehension of the Bible and the meanings of the liturgy had become most difficult. It was Alcuin who produced the "official" textbook on correct Latin grammar and pronunciation, which led to the

acceptance of a precise and international written language that was used throughout multilingual Europe. This initiated the Carolinian Renaissance, one of a series of classical renaissances, the Irish (700), the Roman Law (1100), the Aristotelian (1200), which occurred throughout the Middle Ages culminating in the Italian Quattrocento.

## **2.2 The Italian Renaissance**

The Italy of the fourteenth century was suffering from an economic decline. It was not a unified country but a collection of small independent states continually at war with each other. The papacy frequently meddled in these affairs trying to prevent the dominance of any one state which might threaten the power of the Church. It was against this background that the great republican cities evolved, Milan, Genoa, Venice, and the leader of the cultural renaissance, Florence.

The Florentines were fully aware of their role as pioneers of the "new age", based on a revival of the culture of antiquity. In 1338 Giovanni Villani described it thus, "... our city of Florence, daughter and creation of Rome, was rising and achieving great things, ...", and later Giovanni Bruni stated: "Florence harbours the greatest minds, what ever they undertake they easily surpass all other men, ..." (in Hay 1986 p12).

Rubenstein (1986) summarised the evolution of the Florentine spirit:

"Florence was lucky in her political background, she had no Emperor or Pope to squash every independent initiative ... there was an openness to ideas that stimulated intellectual progress ... the discussion of moral values of philosophy and religion ..."

"... the study of every aspect of ancient Roman life, could all be claimed with some justice to have begun in Florence."

In fourteenth century Florence the structure of politics was broadly democratic, "Equal liberty exists for all - the hope of gaining high office and to rise is the same for all" wrote Bruni in 1428,(in Clark 1969 p101) but in reality the participation in the great intellectual debates, and patronage of the arts involved mainly the upper class citizens. Florence had been lucky, or wise, in its choice of Chancellors; from 1375 the office was held by a

succession of brilliant men with wide cultural interests, beginning with the man who was the dominant figure of the early renaissance, Coluccio Salutati (1331-1406).

The Italian Renaissance was rooted in "humanism", a revaluation of the ancient classics. It did not appear quickly, but evolved slowly from the thirteenth century onwards, and was given its major impetus by the scholar Petrarch (1304-74). He founded the "studia humanitatis" which took root in Florence and blossomed under the chancellorship of Salutati. Weiss (1986) discussed one of the problems we have looking back to this time:

"Humanism was one of the words which were introduced into historical currency by nineteenth century historians. The Latin word "humanista" ... merely indicated a teacher of classical languages ...".

Under Salutati the studia humanitatis debated ancient history, moral philosophy and politics. He assembled a large library of classical texts, established the direct study of Greek in Florence and encouraged patronage of the arts by both the upper class patriarchs, and the public through the state Commune. The great works of Brunelleschi were supervised by the Silk Guild, and the Calima Guild commissioned work by Ghiberti and Donatello. But the humanists were more interested in the arts for their antiquarian rather than their aesthetic qualities.

It was the return from exile in 1434 of L.B. Alberti (1404-72) which provided the basis of the aesthetic theories of the new artists. He produced three works on the great arts between 1435 and 1464, all of which were only published after his death. Nevertheless, he achieved great fame and influence during his lifetime.

In his writings on art the concept of beauty was foremost, he separated art from religion, moving away from symbolism towards nature, from Gothic mysticism to Classical principles, and he wanted artists elevated from artisans to intellectuals. Although he showed little interest in philosophy, he promoted the Pythagorean and Platonic concept of beauty as "concinntas" - the correct proportion of parts; and also as an objective property of things. These theories were to become the basis of art aesthetics for over two hundred

of things. These theories were to become the basis of art aesthetics for over two hundred years. Tatarkiewicz (1974 Vol 3 p92) summarised Alberti's ideas as:-

- "a. art has its essential goal in beauty,
- b. art is a kind of knowledge, like science,
- c. the artist, through the "disegno" in his mind, directs his work spontaneously,
- d. art can surpass nature."

Having started life as a Greek park, then been adopted by the Florentines, the word "Academy" now enters the history of art and art education where it was destined to become an emotive force for over four hundred years as the symbol of "official " art. Scholars accept the renaissance of the word "academy" as occurring first in Florence, though now with its secondary Greek meaning of a "gathering of friends in debate or meditation".

Though there is agreement on Florence as the base of the academies, there is some dispute about the men who formed them. All scholars agree that Ficino's Platonic Academy (1459-92) was the most influential, but Rubinstein and Pevsner both accept that Rinuccini's academy pre-dated this. Rinuccini was a young patrician who used his house as a meeting place for Humanist intellectuals.

The early academies were not centres of education or research: they were places where a group of like-minded humanists could meet and reflect; and even the Ficino had only two artist members in Alberti and Pollaiuolo. The first historical reference to an Academy of Art as we know it today came in Milan under the name of Leonardo da Vinci. The sources of this reference are engravings inscribed "Accademia Leonardi Vinci". Pevsner (1940) accepts the existence of this academy, and confirms Leonardo's theories of art as being in tune with the contemporary academic ideas of the humanists. However, he also comments that no justification exists for the assumption that the Accademia Leonardi Vinci was an art academy, though Leonardo did claim for the art of painting a place amongst the "artes liberales" and wanted it separate from the crafts.

## **2.21 Sixteenth Century Art Education: Apprenticeship and Guilds**

Most medieval craftsmen were members of a guild, and numerous separate guilds controlled each craft. Each guild had its own oath, subscription, insurance, ordinance, and patron saint (painters had St Luke). The guilds were strictly hierarchical, and were spread throughout Europe, declining in influence only when central governments took exception to their restrictive practices. In England, a statute of 1437 ruled against their "unlawful and unreasonable ordinances"; and in Italy the Pope exempted the sculptors from membership.

Bound apprenticeship usually began at about twelve or thirteen years of age, and lasted for five to seven years; after which the apprentice could work as a journeyman.

Sometimes he was paid a small fee, though if the master was famous the youth's parents would pay for tuition. Once the apprenticeship was finished, the journeyman could obtain commissions of his own, sharing the profit with his master; until he received permission from the guild to set up his own workshop. The early years of apprenticeship were spent labouring for the master. In the painter's workshop he had to grind and mix colours, and prepare panels and wall surfaces; little time was spent on learning about art.

Cennini in his book "Il Libro dell'Arte" (1437) offered advice to apprentices:-

"set yourself to practice drawing, only a little each day, so that you may not lose your taste for it."

He recommended that the apprentice should:-

- copy the simplest subjects, drawing lightly with a point.
- use a goose quill for precise ink drawing, adding a wash.
- practice using successive brush washes of ink for the shadows, white washes for the lights, and a pointed brush for the outlines.
- select only the best masters for copying.
- remember the most perfect guide you can have is drawing from nature.

Little remains of Leonardo da Vinci as the founder of the first academy of art. His place however at the beginning of any history of modern art education remains unchallenged.

For it was his theory that laid the foundation for all future systems of academic

instruction up to the nineteenth century. Leonardo proposed a revolutionary syllabus:-

"The youth should first learn Perspective, then the Proportion of objects. Then he may copy from some good master,...Then from Nature, to confirm the rules he has learnt. Then see for a time the works of various masters. Then get the habit of putting his art into practice and work." (483, Richter 1970 p303)

Despite this there is no proof of any attempt by Leonardo to put these ideas into practice.

In medieval times the artist followed the requirements of his patrons; after Leonardo the connoisseur was asked to follow the intuition of the artist, and to acquire the discrimination for appreciating the aesthetic values of the new style.

The greatest Florentine connoisseur and patron of this period was Lorenzo de Medici, who circa 1490 set up a free school of painting and sculpture in the garden at the Piazza San Marco, and appointed Bertoldo as superintendent of antiques, and head of the school of art. Vasari described the academic character of this school, but the teaching methods are not known. The students were not 'apprenticed', so Bertoldi's method is considered to be the first modern system of art education. Michelangelo was one of the chosen students, and he also regarded his own profession as different from that of his predecessors. This new conception of the artist's position in society entailed a new conception of art education. Though neither Leonardo nor Michelangelo ran a formal 'academy', a new pattern of art education was emerging, and both artists had a select band of disciples and gifted apprentices.

The change in attitude during the Renaissance was brought about by the need for artists with intelligence and imagination, capable of not just replication, but of innovation. This situation was described by Michelangelo in 1538 "Everyman increasingly is engaged in... creating and producing new forms...and painting is the fountainhead", and is supported by Leonardo (1550) in his "Treatise on Painting", (34b, Richter 1970 p79):-

"If you say that sciences ... are of the mind, I say that painting is of the mind, for as music and geometry treat the proportions of continuous quantities,... painting treats all continuous quantities,as well as the proportions of light,and perspective"

These developments were summarised by Vasari in 1566 as "I have lived to see Art arise suddenly and liberate herself from knavery and beastiality." (1965 p43).

## **2.22 The First Academies: Classical, Mannerist, Baroque**

The next significant development in the history of art education was Vasari's "Accademia del Disegno" founded in Florence in 1563 by Cosimo de Medici. Vasari in 1562 had proposed at a meeting of artists, a new system of organisation by which they might free themselves from the restrictions of the guilds and raise their social status. He then persuaded the Grand Duke to accept the protectorate, and Cosimo and Michelangelo were appointed 'Capi'.

Though the primary objective of this 'academy' was to establish a new society of leading Florentine artists, the second purpose was the education of beginners. The Regulations of 1563 state that 3 masters be selected to teach selected boys the art of "disegno", and that they should go round the students and draw their attention to faults. So though the academy did involve teaching, there was no formal instruction or classes.

In real terms this academy did little more than relieve the artists from the restrictions of the guilds; Vasari himself quickly retired, and several artists demanded reforms, particularly Federigo Zuccari (1575/6) who offered precise suggestions for the re-organisation of the educational aspects of the academy, which he claimed were badly neglected. He proposed that the academy should become solely a teaching establishment, with a special room for life drawing, and more emphasis on theoretical subjects, which should be taught in courses. Anything having a bearing on painting, sculpture and architecture should be taught, including physics and mathematics.

After Vasari, the principal source of information and descriptions of the development of art education through the academies is the work of Nikolaus Pevsner (1940). Later authors have borrowed extensively from him, but no-one as yet has gone back to his primary sources, or seriously questioned his conclusions.

Professor Pevsner's book is a studious examination of the organisation and influence of the art establishment and its relationship with contemporary social and aesthetic trends. And though populated with large tracts of untranslated Italian, French and German



references, and the occasional monster generalisation, it remains the standard work on the subject. It also has the advantage of a more European point of view than a native British author might provide, and gives equal weight to the German contribution to European culture.

Pevsner attributes the development of the sixteenth century Florentine academy as being due to the social climate of the period, which he labels as a combination of the Medici court and Mannerist art. Whereas these aspects were obviously closely related to developments in art, they were themselves only manifestations of larger issues. It is far too simplistic to label as 'the social climate' the momentous changes in the political and religious attitudes in Europe at the end of the fifteenth century.

Roberts (1985 p235), described Europe in 1500 as "living on three ideas of the past; classical Greece and Rome, the Barbarian culture of the Dark Ages, and Christianity; particularly Christianity". Then he added a warning of the dangers of this type of assumption:

"... changes in ideas, especially shared, collective ideas, are not only very hard to measure and define, but it is sometimes hard to spot when they take place."

Clark (1969 p142) emphasised the 'internationalism' of the age, and the free movement of people and ideas.

Holmes (1988 p279) believes that the humanism in the cities created the political thought which justified both 'republican liberalism and despotic efficiency'.

"We have seen the creation of a civilisation ... distinguished by its wealth based on highly successful agriculture and industry. But it could not have taken the form it had ... without the diversity of a hundred centres of political and cultural aspiration competing for success. That untidy fragmentation was the ground for the extraordinary fertility of our cultural forebears."

Kennedy (1988 p72) saw the situation largely in terms of scale. The fifteenth century struggles which frequently disturbed the peace of Europe were fairly localised and small in scale; the clashes between the Italian states, the rivalry between England and France,

and the wars of the Teutonic knights. But after 1500 these "were subsumed by the larger contest for the mastery of Europe". How much direct influence these issues had on contemporary art is a complex and contentious problem.

Obviously they influenced the physical lives of the artist, for example the comment of Leonardo in the margin of a notebook, "The Medici made me and the Medici destroyed me"; and all three of the great masters, Leonardo, Raphael, and Michelangelo were directly involved in military affairs through their architecture and inventions. But how much of this influence is carried over directly into their work? Raphael's "School of Athens" (1509-11) could be described as a political statement of humanist values, but only in Michelangelo's "Last Judgement" (1535-41) can really be seen an emotional response to the spiritual turmoil of the "social climate".

The direct effect on art of political influence, and religion at this time was a political force, varies from age to age; from the total dominance of Egypt or Byzantium, to the total freedom of the Impressionist or Expressionist movements. But there is no doubting the influence of "aesthetic" ideas, probably because they operate directly on the graphic image rather than the mind or body of the artist.

Pevsner (1940 p55) identified post-renaissance "Mannerism" as both a distinct artistic movement and the stimulus for the formation of formal art academies for the training of young artists. Mannerist art, he claimed, "... calls out for an academy". Mannerism (circa 1520-80) means literally "try to adhere to the 'maniere' set by the masters of the Golden Age", and is classified by art historians as the bridge between the High Renaissance and the Baroque. It sought to represent an ideal of beauty rather than natural images, using exaggerated human gestures, proportions, foreshortening and perspective.

In Tuscany, Pontormo (1494-1540), Bronzino (1503-72), Parmigianino (1504-40), Vasari (1511-74) and Tibaldi (1527-96) were the leading 'Mannerists'. Newton (1941 p176) attributes their 'stylistic tricks' not to their lack of imagination, but to pressure from their aristocratic patrons.

"... a new political situation had arisen. Small, highly civilised courts ruled over by families who had lost much of their political power but none of their intellectual arrogance, imposed their will on the artists who served them."

Maland (1982 p393) was more specific:-

"The sack of Rome (1527) had the moral effect of ... destroying the cult of optimism ... once the Spanish armies throughout the peninsula had demonstrated the helplessness of the individual ... city states fell under Spanish control and were compelled to accept Spanish etiquette ... and fashions.

The Italians lost their vision ... their creative ideas were fossilised ... and their culture became increasingly provincial and complacent."

Of the acknowledged masters of sixteenth century Italy, Correggio (1494-1534), Carracci (1560-1609) and Caravaggio (1569-1609) have all been related by some scholars to the Mannerist school; as have the two great Venetian Painters of the period, Tintoretto (1518-94) and Veronese (1528-88), who both produced works which exemplify the Mannerist style. Crowded canvases with figures in violent movement, posed theatrical gestures, dramatic lighting, strong diagonal compositions and perspective were all enhanced with bright, vibrant, Venetian colours.

The Mannerists believed in certain teachable dogma and canons derived from the masters, and these collective beliefs provided the foundation for the establishment of an academy; this was in Pevsner's words ( p55), "... the logical outcome of this attitude". Renaissance academies were set up initially to free the artists from the restrictions of the craft guilds, raise their social status, and reform the methods of art teaching. They were operated on a casual, unorganised basis; members met for drawing "dal nudo" or "dal natural", which was considered the most essential part of all art training. Even the time of day when the academies met was not fixed, sometimes morning, sometimes evening. Pevsner ( p79):-

"In the Italian language the term academy in connection with art remained ... (until the mid eighteenth century) a word for a certain popular kind of life-class in the houses of artists and patrons".

The innovation of the mannerist academies was the provision of elaborate and mostly schematic rules for the training of young artists. Yet these academic courses were not

intended to replace workshop training, apprenticeship was still the essential preliminary stage in the artist's education. Academies were established throughout Italy in the sixteenth century, but undoubtedly the most important and influential institution, was the "Accademia di S Luca" in Rome. Founded by Pope Sixtus V, and opened on 14th November 1563, with the primary aim of art education, the "Rome Academy" became the model for all future academies for the next three hundred years. Pevsner ( p61):-

"... in their programme all at once the modern academy of art as a training institute seems conceived and realised, complete with drawing from plaster and from life, with 'professori' ... in charge of the correcting."

The leadership of Italy in the field of formal art education continued until the mid seventeenth century, when the centre of both art and art teaching moved to the court of France. The history of art tends to fall into fairly neat chronological and geographic patterns, with pre-eminence falling in the fifteenth/sixteenth centuries to the Netherlands, eighteenth century to France, and alternating in the nineteenth century between England and France. Newton (p198):-

"The reasons why at a given time a particular country or city should become the radiating point for artistic activity are always complex, but ... apart from that period (between the downfall of the Roman Empire and the dawn of the Renaissance) art has always harnessed itself to a cultural centre, ..."

Many commentators merely catalogue these changes and attribute the decline of a country's art solely to aesthetic reasons, 'the movement ran out of steam', 'exhausted its ideas' etc. And whereas it is dangerous and far too simplistic to attribute cultural changes directly to geographic or political developments, Europe during this period was subjected to such momentous changes and pressures that it would be even more dangerous to underplay their influence on the arts.

Recent events in Eastern Europe, the Balkans and the Middle East are a dramatic reminder of the dangers of looking at even the recent past through a twentieth century perspective; the Europe of the sixteenth century was not the Europe we know today.

Many of the countries we know as neighbours and independent nations did not exist as separate states four hundred years ago. Few maps are ever produced in art history books, which is perhaps a shame, for they could illustrate quite clearly political and artistic relationships, (see Appendix 2.3.) . Italy as we know it today, was in the fifteenth century divided into five separate provinces, centred on Milan, Venice, Florence, Naples and the Papal States. These states were frequently at war with each other, and frequently occupied by the outside forces of France and Spain. Spain itself was divided into the Kingdoms of Aragon, Castille and Granada. South West France was part of the Duchy of Milan, and Germany was a collection of small 'Palatinates' ruled by princes and was part of the Holy Roman Empire. Holmes (1988 p276) described the situation:-

"... by the 1440s all Italy was embroiled in warfare ... In 1454 Milan and Venice finally agreed to a peace ... this was followed by a general pacification and the formation of 'The Italic League'.

That it (this peace) should be shattered in 1494 ... plunging Italy into decades of the most serious fighting Europe had seen, was largely the responsibility of others. France and Spain, both with claims to titles in Italy, both geared up for war, both willing to use Italy as the arena for that war."

Kennedy (1988 p143) compiled a list of the most significant influences on the evolution of the Nation-states in Europe:-

- "- centralisation of political and military power
- economic changes undermined the old feudal system
- increase in state taxation/civil service bureaucracy
- relationship of social groups changed by use of contracts
- division of Christendom by the Reformation
- decline of the importance of Latin
- increase in the use of vernacular language
- improved communication/invention of printing
- oceanic exploration/discoveries
- pressures of multitude of wars
- development of the philosophy of 'Nationalism'."

A case could be made for the effects of any of these items on any culture, so it would be naive to assume that the combined effect of these changes could be ignored, though attributing specific influences to changes in the work of particular artists is a difficult and

largely subjective task. However, from Kennedy's list one particular item did provide the impetus for the next great art movement, the "Baroque". The sixteenth century religious division did not itself produce any significant artistic changes, but the Catholic Counter-reformation did. Initiated by Pope Paul III (1534-49) originally to counter the corruption within the Catholic Church, it grew into a major political force, and by the end of the century it had fostered a major artistic force, the Baroque; a physical demonstration of the power and glory of the Church. Maland (1982 p399):-

"In the long run, however, the culture of these courtly coteries became sterile. Art could not develop merely as an intellectual pastime: it needed some new force to encourage the appeal to the emotions. This was supplied ... by the 'Counter-reformation'.

The Roman Church became aware of the propaganda value of the arts to glorify the Church, and to evoke the faith and piety of the masses."

The chief source of the international style that became known as Baroque was Gianlorenzo Bernini (1599-1680) a dazzlingly precocious sculptor who at the age of 26 became architect to St Peter's and was responsible for the design and execution of all the interior decoration, a task that took forty years.

Despite the fact that the Baroque had its origins in the religious Counter-reformation, the Church was not the only source of patronage for the arts. Clark (1969 p185):-

"By 1620 the rich Roman families, who were in fact the families of successive popes, had begun to compete as patrons ... for the work of living artists ... the leading families put painters under contract like athletes ... As often happens, a sudden relaxation and affluence after a period of austerity produced an outburst of creative energy."

For all its opulence, impressive scale and international influence, the Baroque style produced very little impact on formal art education. Pevsner devoted a whole chapter to this period before coming to the conclusion that:-

"The term Accademia, solemnly conferred less than a century before on institutes of ambitious social aims, had relapsed into being a kind of vague synonym of arte, or compagna, or universita."(p139)

Yet they were not just glorified guilds. All the supporting evidence points to the

evolution of small private academies in the studios of artists, like Paolini at Lucca, or in the palace of a patron like Count Ettore Ghislieri in Rome, and it was in this unpretentious shape that the art academy in the words of Pevsner "first migrated into the North".

In the north guilds were not so restrictive, and artists had freedom and patronage through the local rich merchant class. Art education remained in the studio workshops of the leading artists including the largest and most famous, that of the greatest Baroque painter, Peter Paul Rubens (1577-1640). Rubens had a large number of assistants, apprentices and pupils, and pioneered a minor form of assembly-line factory production where his designs were transformed by teams of specialists into products for export throughout Europe.

### **2.3 The Scientific Revolution**

Throughout the sixteenth century Spain had been the dominant European power, dating from the election of the Hapsburg Charles V to the thrones of both Spain in 1516, and the Holy Roman Empire in 1519. The power of the Church and the supremacy of the Pope were re-established in the Mediterranean states and in those northern countries under Hapsburg rule, Austria, Bavaria, Bohemia, Hungary, Poland and the southern Netherlands. But there was continuous inter-national friction as various alliances tested the Hapsburgs. These wars continued for over a hundred years until Spain was bankrupt and the French emerged as the new great power. Though the situation in Europe was violent and volatile, the most important revolution was intellectual not political.

The seventeenth century heirs to Erasmus, More, Luther, Calvin, and Macchiavelli, were Francis Bacon (1561-1626) the founder of modern inductive reasoning; Thomas Hobbes (1588-1697) the first really modern writer on political theory; and René Descartes (1596-1650) a mathematician, scientist, and considered to be the founder of modern philosophy. With the theories of these men the emphasis moved from religious to scientific philosophy.

The Protestants had initiated a process of liberation through new speculations about history, aimed at the removal of ignorance and superstitions by knowledge. Though this was not without opposition, the Jewish writer Spinoza (1634-77) fled to Holland to escape the Spanish Inquisition, and Galileo (1564-1642) had similar problems in Italy, reported by Russell (1946 p520):-

"Galileo ... was condemned by the Inquisition, first privately in 1616, then publicly in 1633, on which latter occasion, he recanted, and promised never again to maintain that the earth rotates or revolves."

The first intellectual achievement of this new "scientific" age was to make it unreasonable to hold the view that the earth was the centre of the universe, and man was the only rational inhabitant. This idea struck at the very heart of all received wisdom. When a Polish ecclesiastic, Copernicus (1473-1543) proposed that "the Sun was at the centre of the universe and the Earth revolved round it annually", he was rebuked by both Calvin "Who will venture to place the authority of Copernicus above that of the Holy Spirit?", and Luther "People give ear to an upstart astrologer who strove to show that the earth revolves, not the heavens or the firmament ... but sacred scripture tells us that Joshua commanded the sun to stand still, and not the earth".

When Copernican hypothesis came under discussion in England it produced this response from Marlowe (circa 1587) in "Tamburlaine":-

"Our souls, whose wondrous faculties can comprehend  
The wondrous Architecture of the world,  
And measure every wand'ring planet's course,  
Still climbing after knowledge infinite,  
And always moving as the restless Spheres,  
Wills us to wear ourselves and never rest."

The questioning of the traditional picture of the universe was repeated by John Donne (1611) in "Anatomy of the World":-

"Their new Philosophy calls all in doubt,  
'Tis all in pieces, all coherence gone."



This symbolic struggle between religion and science over the 'heliocentricity of the universe' has always been considered by historians as a watershed in western thinking. More recently this viewpoint has changed to include in the dispute the whole scientific process. Roberts (1985 p242):-

"The crucial change in the making of the modern mind was the widespread acceptance of the idea that the world is essentially rational and explicable, though very wonderful and complicated."

Kepler (1571-1630) and Galileo (1564-1642) took advantage of contemporary technical improvements and inventions in scientific instrumentation. The development of the telescope, microscope, barometer, thermometer et al, allied with developments in mathematics, encouraged scientific observation and more accurate measurement and data collection. It was the particular discovery of the laws of planetary motion, published by Kepler in 1609 and 1919; then developed and extended by Galileo which struck at the very 'firmament' of medieval religious theory and the fixed cosmos of Aristotle.

The triumph of the rational, scientific concept of the universe over the mystical, religious theories was completed by the work of Isaac Newton (1642-1727). Newton's 'laws' of Planetary Motion, and Gravitation framed the scientific concept of the structure of the universe which dominated western thinking for the next three hundred years.

As most of Europe was expanding its thinking outwards from man, to measuring and understanding the external 'real' world; the French were focussing their energy inwards towards the centre of their universe, the King.

### **2.31 Seventeenth Century France: Socio-Political Context**

Chronologically, the French succeeded the Spanish in the seventeenth century as the most powerful nation in Europe, but it was not a simple take-over or conquest. Kennedy (1988) described France in 1598:-

"... it was a country severely weakened by civil war, brigandage, high prices, and interrupted trade and agriculture; and its fiscal system was in pieces ... For a long time after, France was a recuperating society."(p138)

Despite improvements in government control through Scully (1559-1641) and Richelieu (1585-1642), the internal problems of France continued for fifty years, culminating in the rebellion of 1648, which began with a tax strike against Chief Minister Mazarin (1602-61), and led ultimately to the bankruptcy of the French government. Towards the end of the Franco-Spanish war, both sides were utterly exhausted, and it was only the intervention of England through Cromwell which tilted the balance against Spain in 1659. The era of the Austro-Spanish axis fighting the Protestant states plus France, was replaced after the Treaty of the Pyrenees by a looser system of short term shifting alliances. The rise to dominance of France under Louis XIV as the focus of these alliances, was summed up by Kennedy as due to "organisation". The system of centralisation begun by Scully was carried through by Colbert (1619-83) who focussed all power on the King, the "Absolute" ruler.

The laws of the medieval guilds in northern Europe had remained unchallenged from the thirteenth century to the middle of the seventeenth century. The breaking of the power of the guilds and the establishment of an academy in France came about during the reign of Louis XIV. The French had always looked to Italy as the leaders in the visual arts from the time of Leonardo who in the last years of his life lived and worked under King Francis I. French kings often invited Italian artists to come to work in France, and a number were appointed "Royal Breviaries", with commissions and status outside the restrictions of the long established craft guilds.

The demand by the guilds for the reduction of these privileges provoked the court artists including Lebrun (1619-90) to follow their Italian counterparts and plan the formation of an academy. The dependence of the French on the traditions of Italy is perhaps best illustrated by the fact that the two greatest French artists of the seventeenth century, Nicholas Poussin (1593/4-1665), and Claude Lorrain (1600-82) both lived and worked in Rome.

### **2.32 The Establishment of the "Academie Royale"**

A formal approach was made by Lebrun to the king, then 10 years old, in January 1648; proposing the establishment of an academy free of guild restrictions, and with a programme of art education based on a thorough knowledge of architecture, geometry, perspective, arithmetic, anatomy, astronomy and history.

The guilds immediately responded by setting up an academy of their own, but in June 1652 the privileges of the 'Lebrun' Academy were ratified. However, the struggle was not over as lack of resources restricted its activities until June 1655 when royal support in the form of status, finance and accommodation gave the academy the foundation it needed.

As life-drawing was the centre of the educational programme, it was declared a monopoly. Nowhere outside of the academy was public life-drawing permitted.

Lebrun was appointed Premier Peintre du Roi and Chancellor of the "Academie Royal de Peinture et de Sculpture". Jean Baptise Colbert (1619-83) was elected in 1661 as 'Vice-Protector', the real ruler of the academy, and together they worked to establish the rule of an academic style. Colbert ordered all the court painters to join the academy, thus establishing his dictatorship and controlling the independence of the artists, completing their move from the frying pan of the guilds. Colbert exerted a great influence on the whole of French life, putting into operation the economic system of "Mercantilism". He began by breaking all local and provincial powers, controlling the civil and economic life of France from one central authority. In the ten years from 1664 to 1673 he established control over the Customs, Water, Forestry, Civil, Justice and Commercial systems. Every new 'Ordonnance' increased the power of the King and the Central Government. From his position as Chief Minister to the King, he raised taxes, built new roads and canals, and developed the French Navy. He also applied his system to the arts, creating new academies for "Danse", "Belle Lettres", "Musique" and "Architecture"; and he incorporated the academie as part of the civil service, placing commissions, appointments and art education in the hands of Lebrun, who became the virtual dictator of French art.

Developing a French classical tradition based on the imperial grandeur of Rome, Colbert demanded a well-ordered style of art which would compare with the classical style of French literature. The academie was modelled on the Accademia di San Luca of Rome, and such was the Italian influence that Colbert in 1666 established the Academie de France in Rome.

Under Lebrun, as Colbert's instrument, the art academy produced a scheme of work designed with strong educational aims. Not just the clear understanding of the principles of art, but definite rules for young artists. Pevsner (1940 p93):-

"No epoch ... has had so unswerving a faith in clear, mathematically provable rules, and in arguments throughout accessible to reason as the golden age of Absolutism, the epoch of Corneille ... Spinoza ... Boileau".

The formal art training was based on direct contact with Classical art, beginning with drawing parts of the body from casts of Greek statues, and ending with composition of epic scenes from classical literature.

Contemporary art books (de Chambray, Felibien, Dufresnoy), and Lebrun's lectures at the academy advocated the dissection and analysis of a picture according to specific categories. De Chambray (1662) offered invention, proportion, colour, expression and composition as the important categories; and Felibien (1666) further offered a scale of values for the subject matter, with still-lives at the bottom, below landscapes, animals, and portraits, leading up to "histories" as the most valuable.

The classical antique provided the unchallenged pattern for the proportions, gestures and attitudes expressed in paintings. Greece and Rome were considered more perfect than nature.

Though the French academy was clearly modelled on the Accademia di S Luca in Rome, it did contribute one innovation that became an essential characteristic of future institutions, a set timetable. The earlier Italian schools had a casual attitude the time spend on drawing practice, some required an hour in the morning, some two hours on the

occasional evening. The French introduced not only a formal structure into the lessons, but fixed the time, place and duration of each class.

Pevsner (p96) quotes "Proces-Verbaux volume 1":-

"Life-class ..... 6 to 8 am in the Summer  
..... 3 to 5 pm in the Winter  
Perspective .... Wednesday and Saturday mornings  
Anatomy ..... Saturday afternoon.  
Students were encouraged to draw from plaster casts at other times; but the lessons were not free."

A further example of the importance of Rome was the establishment in 1666 of the "Academie de France" in Rome, with Poussin to be its first Director; and where outstanding students were sent to study.

The Paris academy passed through three phases during the hundred and fifty year reigns of the three Louis. The initial rise to glory under Colbert, the decline of influence during the first half of the eighteenth century, and the reforms during the Enlightenment.

Though in 1694 the academy was asked to stop its activities due to lack of funds, the abolition of the academy was not seriously considered even in the worst years of bankruptcy and military defeats; but by the accession of Louis XV in 1715 its absolute rulership in matters of taste was over, due to changes in the court itself, leading to Rococo.

### **2.33 Rococo and Neo-Classicism**

Eric Newton (1941 p203):-

"It was not until the end of the seventeenth century that France began to produce an art that, instead of reflecting the faded glamour of Italy, reflected the lively if equally artificial life of Versailles."

It is not surprising that French artists found it very difficult to escape the influence of Italy as their indigenous culture was so weak. Poussin was a French artist who spent his life in Italy, Claude from Lorraine (not part of France at that time) also lived in Rome,

and even the next important French artist, Antoine Watteau (1684-1721) was born in Flanders and did not come to France until he was eighteen. Watteau was more influenced by Rubens than by Italy, and so had weaker ties to the classical tradition and the religious aspects of the Baroque. His work developed into a perfect reflection of contemporary life at the centre of the French universe, the court of Louis XIV, and the leisured lifestyle of the aristocracy.

During the reign of Louis XIV the whole of intellectual life was under the protection and patronage of the king. When Philip of Orleans became Regent on behalf of Louis XV (1715), he transferred the court from Versailles to Paris and dispersed its members. The Royal circle became much more intimate, and as the ceremonial trappings of the monarchy grew less grand, new centres of society evolved in the 'salons' of the nobility and the new nobility - the 'nouveau rich bourgeoisie' of bankers and merchants. It was this 'salon society' which produced the Rococo, described by Hauser (p9):-

"The bourgeoisie gradually took possession of all the instruments of culture - it not only wrote the books, it also read them, it not only painted the pictures, it bought them ... the cultural class ... becomes the real upholder of culture."

Rococo was a reaction against academic Classicism and the religious aspirations of the Baroque, described by Clark (1969 p231):-

"Instead of the static orders of antiquity, it drew inspiration from natural objects, in which the line wandered freely - shells, flowers, seaweed - especially if it wandered in a double curve.  
Rococo was a reaction ... but it was not negative. It represented a real gain in sensibility. It achieved a new freedom ... and more delicate shades of feeling."

Clark further suggests that the rhythms of Rococo "have the effect of music, and seem to be echoed by the music of the next fifty years, through the work of Haydn and Mozart."

When Watteau died in 1721 the Rococo style was beginning to affect decoration and architecture, and within ten years it had spread throughout Europe.

Newton (p204) described Watteau as the bridge between the worldliness of the

seventeenth century and the playfulness of the eighteenth.

"In Watteau's painting the formal pattern of court life is all there - the foppery, the infinite leisure, the endless round of love-for-love's sake, the elegance and careful avoidance of material discomfort, but behind all that is acute nostalgia. Nothing lasts."

The decline of influence of traditional classicism, and the rise to prominence of the Rococo of Watteau clearly illustrates the victory of the salon over the court. This victory gave rise to an entirely new phenomenon, which is still with us today, the 'Art Exhibition'. Which appeared for the first time outside the formal academy shows. Though occasional exhibitions had been held in earlier times in Italy and the Netherlands, it was only in late seventeenth century Paris that regular art exhibitions began, as diminishing state support forced French artists to look around for buyers. The concept of an art form determined by 'market forces' continued until 1791 when, after the Revolution, the state reaffirmed its control, and a new art form emerged.

In France during the age of Louis XIV and XV, the artist was a "social necessity", and furtherance of art came only from the court, so in exchange for freedom to work, they had to give up freedom of expression.

Almost the reverse situation existed in Holland at the same time. The Dutch guilds, provided their tax was paid, did not impose any restrictions on their artist members. Nobody interfered with the work, and although commissions were still offered by patrons, a new system evolved of artists painting 'speculatively', producing their own ideas for sale at a later date. This system produced a steady living for journeymen painters in tune with current public taste, but also produced the occasional tragic victim. Pevsner (p136) identified Rembrandt (1609-69) as the worst example:-

"As long as his art was comprehensible to the wealthy bourgeois of Amsterdam, he was admired. When he grew in spiritual intensity, when his speech became more and more intimate meditation of a recluse, success deserted him."

Pevsner goes on to state the success of an artist was no longer determined by the value of

his art as recognised by a class of trained dilettanti, but depended on the verdict of a middle-class mass, leaving great genius to destitution and disdain. Could these be the same 'dilettanti' he derided for dissecting paintings, and for formulating strict rules and scales of value?

How much of Rembrandt's decline was due to the poor taste of the bourgeois, and how much to other factors is not an issue here. But as long as this market situation existed in Holland there was no need of an official art academy. Though Rembrandt in his heyday did operate a private one, described by Sandrart (1906):-

"... his house in Amsterdam was crowded with almost innumerable young gentlemen who came for instruction and teaching. Each of them paid 100 fl a year."

The practical difficulties of even establishing a formal chronology for the history of art are shown most clearly at this time. Operating in Europe at the end of the eighteenth century were the traditional and still powerful classicism of the academies, the Rococo of Fragonard (1732-1806), the Neo-Classicism of J.L. David (1748-1825), and the early Romantics like Goya and William Blake. From these ideological conflicts, for they were conflicts, and sometimes quite violent, there emerged the two opposing philosophies which have dominated western thinking ever since: the Classical/Romantic dichotomy. The classicists believed, in Winckelmann's words, that art should aim at noble simplicity and calm grandeur; while the romantics said, after Burke, that art should excite the emotions, and rebel against the prohibition of colour and movement. This became much more than a simple conflict of styles, and two hundred years later it is still the great 'schism' in art. The early skirmishes were fought in France between the Rococo and the Neo-Classicalists led by David. The revolutionary era (1780-1800) with its pretensions adopted from the heroic republicanism of Rome chose Classical art as its most appropriate image. At this time there were a number of young French artists studying in Rome, untainted by Rococo and yet resisting academic classicism. Their new stricter form of classicism was based on opposition to the aesthetic of the antique and placed



more emphasis on the subject matter of heroic self-sacrifice of the Roman patriot. When David's "Oath of the Horatii" was first exhibited in Paris in 1785, it was greeted as 'the most beautiful picture of the century' and became almost overnight the ideal symbol of the republican movement. Within a few years David rose to become the most influential artist of his day and after the fall of the French monarchy in 1792, he became artistic dictator of the Revolution, and thus of France. When Napoleon was made Emperor, he appointed David as "premier peintre", and the union between art and politics became complete; art became a confession of political faith. Benoit (1897):-

"... art must not become a privilege of the rich and the leisured ... it must teach and improve, spur on to action and set an example. It must be pure, true, inspired and inspiring, contribute to the happiness of the general public and become the possession of the whole nation."

In 1795 David reconstituted the Royal Academy as the 'Academie des Beaux Artes'. His influence was paramount for over twenty years, and this period represents probably the most complete unity between political and artistic ideals, with the production of historical epics reflecting the ideals of both the republicans and imperial Napoleon.

As the Neo-Classical movement eliminated Rococo and took complete control in France, supporting ideals of the French Revolution: elsewhere in Europe a far more decisive and influential cultural revolution was beginning, Romanticism. Although it had its roots in the pastoral aspects of nature and English liberal thinking, the early Romantics, like Wordsworth and Coleridge, were active supporters of the French revolutionaries.

### **2.34 Liberalism and the Enlightenment**

Towards the end of the seventeenth century, the leadership in European socio-political ideas came from England and Holland. Holland had for some time been the only country which allowed the printing of books on contentious socio-political themes. Many authors had work published in Holland which would have been classified as sedition in their own country. Yet though Holland lived out a liberal regime, it was England that produced the

ideas and theories that were the philosophical roots of the liberal movement and were to revolutionize Europe. Summarised by Russell (p577):-

"Liberalism stood for religious toleration; it was Protestant; it valued commerce and industry; and favoured the rising middle class rather than the monarchy and the aristocracy ... the divine right of kings was rejected in favour of the view that every community has a right ... to choose its own form of government."

These ideas were crystallised in the work of John Locke (1632-1704) . In the years before the "Glorious Revolution" of 1688, when Parliament and commerce combined to oust James II and offer the English throne to William of Orange, Locke had kept a very low profile. But once compromise and moderation became key words, and the Act of Toleration was passed, Locke published (1690) his "Two Treatises of Government" which advocated government as a social contract, and became 'the bible of modern liberalism', exemplified in the following lines:-.

"Absolute monarchy is as if men protected themselves against polecats and foxes, but are content, nay think it is safety to be devoured by lions."

The ideas of John Locke had immense influence on eighteenth century France through translations of his ideas by the man considered by most scholars to be the essence of the Enlightenment, François Voltaire (1674-1778).

For all the great seventeenth century developments in science, music, art and literature, the eighteenth century was still a time of senseless persecution, cruelty and continuous brutal warfare. Voltaire more than anyone demanded that 'progress' be humanitarian. To the new rational belief in scientific 'natural law', Voltaire added the vigorous campaign for justice to be tempered with tolerance. The lightness and colour of Rococo, the elegance and luxury of the Court and the 'salon', even the relaxation and freedom of speech could not hide the darker side of France. Described by Roberts (1985 p254):-

" ... ladies of the French court paid high prices for good seats from which to see a man ... branded in the hand, his limbs broken on the wheel and molten wax and lead poured into his wounds before he was drawn - disembowelled - and torn apart by four horses ... "

Voltaire was famous in his own time as a poet, playwright, wit, historian and philosopher; but he is best remembered for three things, his fight against injustice, his campaign for the abolition of slavery, and his contributions to the great document of the eighteenth century, the "Dictionnaire Raisonne des Sciences, des Artes et des Metiers". Contained in this 24 volume encyclopaedia, were all the thoughts and deeds of the age; including the drive of rational humanitarianism towards social reform through action.

If art is a reflection of its social context, then dramatic events such as those of the eighteenth century could hardly fail to have a profound effect on the art of the period.

However, tracing any direct influence is a complex task.

French writers of this period saw in English institutions the quintessence of 'progress' and built up a legend around English liberalism - a legend that only partly corresponds to reality. There was a widening of the cultural base in England which was expressed most strikingly in the rise of the new and regular reading public, which assured a number of writers a livelihood free from personal obligations. This growth in the number of readers was encouraged by the liberal policy and secular outlook of the Anglican Church, which aided the dissolution of feudalism and the rise of the middle classes.

Hauser (p41), citing Schoeffler's sociological work (1922) claimed:-

"The Protestant clergy played a highly important part in the dissemination of secular literature, and the education of the new reading public. Without the publicity they received from the pulpit, the novels of Defoe and Richardson would scarcely have achieved the popularity accorded them."

Of the cultural media on which the new reading public thrived, the periodicals, dating from the beginning of the century, were the most important, 'the great invention of the age'. From these periodicals the middle class received both its literary and social culture. Steele's "Tatler" (1709) and Addison's "Spectator" (1711) bridged the gap between the scholar and the educated general reader.

Many historians emphasise the influence of Christianity on the development of western civilisation; but after years of theological disputes and sectarian rivalry, it was the

scientific revolution that changed the expressive forms of culture. As the influence of the Church declined in the early eighteenth century, artists found a new vehicle, nature.

## **2.4 The Study of Nature: Literature and Landscape**

The objective study of nature by seventeenth century scientists introduced a scepticism into the image of the Church already battered by the violence of the Reformation; and nature itself was seen as the embodiment of divinity.

William Cowper (1731-1800) "The Garden":-

"Nature, enchanting Nature, in whose form  
And lineaments divine I trace a hand."

The contemplation of nature as an end in itself was not a new idea. It had its origins in the classical pastoral poetry which was an invention of the Hellenistic writer Theocritus (circa 270 BC). Born on Sicily, his "Idylliums" began the tradition of pastoral and idyllic poetry continued through Virgil (70-19 BC) in his bucolic "Eclogues", recreated by the French poet Marot, and in the "Shepherd's Calendar" (1579) of Edmund Spenser (1552-99). Of these it was certainly Virgil who provided the major influence,

"Beneath a shady beech you may rehearse  
At ease my Tityrus, your simple verse;  
I'm forced to leave my country and to roam,  
My Tityrus, from country and from home:  
You can here fill, at leisure in the shade,  
With Amaryllis' name the wooded glade." (Eclogue 1.)

And he further developed the relationship between man and nature in his *Georgics*:-

"But over high Parnassus' lonely crest  
Poetic rapture bears me: sweet to pass  
Where never wheel has marked the tender grass. (3.)

"Flax burns, and oats will burn, the fertile ground:  
No less burn heavy poppies, slumber-drowned." (1.)

R. L. Fox (1986) explained the resurgence of pastoralism:-

"Town and country ran into each other everywhere (in Greece), and nobody suffered from urban suffocation. The division, rather, was cultural. Pastoral transposed extreme urban wit and refinement on those who owed least to urban values. Pastoral has always flourished in periods of an exquisite, urban culture, Spenser's England or Watteau's France."

Landscape painting is usually dated from Titian (1485-1576), but in Britain the landscape (nature observed) was in the words of Parris (1973), "... verbally framed before being visually read. Nature, as a pastoral landscape, was expressed in verse, before paint".

Milton (1608-74) was the literary counterpart of Titian, and though not a pastoralist proper he used natural description as a setting for his work. In "Paradise Lost" (1667):-

"... About me round I say  
Hill, dale and shady woods, and sunny plains,  
And liquid lapse of murmuring streams; by these,  
Creatures that lived and moved, and walked or flew'  
Birds on the branches warbling: all things smiled';  
With fragrance and with joy in my heart o'er flowed ..."

James Thomson (1700-48) set out from natural scenes and states to a consideration of man's place in the great scheme of Nature. He brought to an established tradition of pseudo-Virgilian pastoral a new concern for the detail of nature; to the landscape of feeling he added the landscape of fact. In the preface to "Winter" (1726):-

"I know of no subject more elevating, more amusing; more ready to awake the poetical enthusiasm, the philosophical reflection, and the moral sentiment, than the works of Nature."

This feeling of rural 'nature' produced the major contribution of Britain to the history of art, landscape painting. Landscape became nature observed, idealised, elemental, expressive or dramatic, a subject worthy of study. Conal Shields (1973 p9):-

"The rise of landscape painting in Britain between 1750-1850 is, surely, amongst the most remarkable episodes of cultural history: yet it is a phenomenon for which, so far, no convincing account can be given ...

What we do know points to a multitude of circumstances ... And, horror of horrors, (art historians tend to ignore this), nature itself was a supremely problematic concept."

In Britain early in the eighteenth century, landscape painting took two forms; topography, the depiction of the country houses and estates, and the "ideal " landscape, usually a pastiche of an old master; yet it took almost one hundred years to achieve any acceptance as a worthy art form. Richardson, the leading art critic of the period, wrote in "The Connoisseur" (1719 p44):-

"A History is preferable to a Landscape ...; the reason is, the latter Kinds may please, ... but they cannot Improve the Mind, they excite no Noble Sentiments ..."

Yet many of the landscapes that contemporary artists were required to paint were actually man-made. Not even 'developed' by agriculture, industry or civil engineering, but constructed by landscape architect-gardeners to recreate the classical pastoral of "Arcadia". Many estates included mock temples, and some for example 'Stourhead' in Wiltshire (1725-60) included direct references to Virgil, Ovid, Claude and Poussin.

Within the academic tradition acceptance was painfully slow, while outside the cloisters of academia, progress was little quicker. Established artists like Gainsborough, in 1784, and Turner from 1804 exhibited "pastorales" in their own galleries. Around 1793, a Dr Munro founded an informal "academy", including Turner and Girtin, for the development of landscape painting. By 1808 a visitor to an exhibition of watercolours observed:-

"In pacing round the rooms, the spectator experiences sensations somewhat similar to those of an outside passenger on a mail-coach making a journey to the north." in Hardie (1967 p117)

Yet even the best artists were still vulnerable. Shields (p13) reported :

"... the manic depressive condition of both Turner ... and Constable ... must afford painful proof of the cultural disequilibrium with which the landscapist had to contend."

It was not until Ruskin took up the cause, in 1843, that landscape achieved the status that it has today.

"Investigation of the natural world was ... the ultimate activity, the noblest and most enriching pursuit of all." Pt 11, ChV, §4

Support also came from the academician C. R. Leslie (1855 p253):-

"But the love of landscape is a love so pure .. and whenever such a love is native, it is the certain indication of a superior mind."

"... for if Burns, ... writes as a poet, why may not Gainsborough, with his extreme sensibility to every beauty of Nature, paint like one ..."

## **2.41 The Romantic Movement: The Importance of the Individual**

The 'nature' poets, particularly Thomson who was in his day the most famous poet in Europe, provided an early influence on one of the major figures of the eighteenth century, Jean-Jacques Rousseau (1712-78), a contemporary of Voltaire and generally acknowledged as the father of the Romantic movement. Rousseau took the British response to nature, allied it to his own experience of alpine Switzerland, and produced a belief in the beauty and innocence of nature which he extended to include man. Bertrand Russell believed that Rousseau was not a philosopher in the true sense, and was more important as a social force than as a thinker; citing "The Social Contract" (1762), which reaffirms the ideas of John Locke, rejecting the absolute Monarchy and promoting the democratic ideal: "Man is born free and everywhere is in chains." With the publication of his book Rousseau was forced to leave France and take refuge in Prussia under the patronage of Frederick the Great, as the death penalty was the sentence for the writing of books against religion or public order, though in practice the guilty were merely exiled. In Prussia he soon became a household name and influenced a whole generation of young German writers, including Kant, Lessing, Goethe, Schiller and Herder who became the "Sturm und Drang" (the Storm and Stress Movement). This group became the leaders of the Romantic movement in Germany, adding emotional, dramatic elements to the study of Nature.

Rousseau moved again in 1765, this time to stay with his friend David Hume, the Scottish philosopher. It can be no coincidence that the next literary expression of Romanticism was carried through in Britain in the work of the following generation, Coleridge,

Wordsworth, Blake, Keats, Shelley, Byron, Burns and Scott.

Parallel to this literary movement was a much more international list of romantic thinkers working in the visual arts. Piranesi (1720-78), Fuseli (1741-1825), Goya (1746-1828), and William Blake (1757-1827) were too diverse ever to be called a group, yet they shared the common ideals of Romantic freedom and self-expression.

The dissemination of ideas through the visual arts was considerably slower and less influential than through literature, due to the mass circulation of the print medium.

Voltaire estimated that the reading public for eighteenth century French literature was two or three thousand; whereas the public for fine art numbered only a few connoisseurs and collectors. Consequently, the early Romantic movement in both Germany and England was initiated by their writers. In both cases the root of their ideas was a response to nature; and a comparison of Goethe and Wordsworth gives a clear indication of the differences in their national responses. Yet soon all the stirrings of the Romantic movement were integrated into a wholly European art form which has profoundly influenced all aspects of our culture to the present day.

The contemplation of nature as an end in itself was not a new idea. it had its origins in classical pastoral poetry. The pastoral, contemplative response to nature induces a reflective, introspective attitude, which places much more emphasis on the imagination of the individual and his personal emotional situation. This change from quiet reflection to an active imaginative participation is the key to the next and most significant phase of the romantic movement, and the most important for this study in particular, for it highlights the individual, his independence, and his imagination.

Wordsworth (1770-1850) "Tintern Abbey" 1798:-

" ..... For I have learned  
To look on nature .....  
..... And I have felt  
A presence that disturbs me with the joy  
Of elevated thoughts; a sense sublime  
Of something far more deeply interfused ..."



In earlier times man's relationship with nature, the external world, was secure in his religion, more recently science had offered an alternative but still positive position. Within both these frameworks even the horrors of life are rational and explicable. The pessimism of phase two of the Romantic movement was possibly due to the rejection of both these viewpoints.

Some authors, including Stapleton and Roberts, attribute this change to disillusion with the excesses of the Revolution; others including Clark and Bronowski believe it to be due to an over-emotional response to the enormity of "nature". But all agree that the general opposition to reason, order and control was the demand for freedom to think, to feel and most of all to act. With most artists the desire for action was fulfilled by their work, though many lived a lifestyle which rebelled against convention, and some, like Byron, became actively involved in revolutionary activities.

Hauser (1962 p155) claimed that the Romantic movement:-

".. represented one of the most decisive turning points in the history of the European mind ... Never since ... the Middle Ages, had reason ... and the capacity for self-control been spoken of with such contempt."

Retrospective analysis of the arts is often made more difficult by subsequent changes in the uses and meaning of some of the key words, eg 'humanism' and 'nature'. Current dictionaries classify 'romantic' in quite "Cartland-esque" language; "... evoking thoughts or feelings of idealised love"; and describing 'romanticism' as "... emphasis on feeling and content, on the sublime, supernatural, exotic; free expression of passions and individuality".

As the pendulum of human values was swinging from 'reason' back to 'feeling', emphasis on emotion became the keystone of the Romantics. But as the early optimism of the movement died under pressure from political and industrial revolutions, the darker side of human nature emerged.

Many commentators have highlighted the basic pessimism of the Romantic movement.

Pessimism is exacerbated by failure, and to the imaginative thinkers of the late seventeenth and early eighteenth centuries it was clear that the pillars of society were failing. The influence of the church was waning; science, as ever, was producing more questions than answers; one great social revolution had degenerated into dictatorship and inter-national warfare; and the excesses of the Industrial Revolution were producing a backlash of anti-materialism against the notices of "profit at any cost".

If the answers to the problems of the world were not available externally, they might just as easily be found within the mind of the individual, at least the artists were able to exorcise their feelings, fantasies and phobias through their music, literature and art.

Hauser (1962 p158):-

"Only from the time of the (French) Revolution and the Romantic movement did the nature of man and society begin to appear as essentially evolutionistic and dynamic. The idea that we and our culture are involved in eternal flux and endless struggle, the notion that our intellectual life is a process with a merely transitory character, is a discovery of romanticism and represents its most important contribution to the philosophy of the present age."

Movements in the arts generally begin with one powerful idea, Gothic art had a religious message, Neo-Classicism a political message and Romanticism began as an art form with a social message. Although after years of revolution and war, society in nineteenth century Europe began to re-assert its structures, and the old order returned; the Romantic movement even though exhausted from its self-imposed traumas was not affected, and indeed has never gone away. It left a legacy of the importance of the individual, his independence and his imagination which still exerts great influence on art and society today.

Conflict in the theory of art between the Classic/Romantic camps offered no compromises, and the new generation could find no use for the academies. They were suitable for training only minor talents and artisans, for the Romantic, genius needed no teaching. Unfortunately their condemnation of the academies was based on the same

ideology as the earlier artists' condemnation of the guilds.

In 1720 there were nineteen academies in the whole of Europe, of which Pevsner labelled four as 'proper'; Paris, Rome, Florence and Bologna. By 1790 there were well over one hundred, including twenty in Germany. He attributed this growth to the reaction against the Rococo art of the French court and the rebirth of interest in the classical antique.

Listing as stimulus the excavations at Herculaneum (1738), and Pompeii (1748) and the writings of J. J. Winckelmann (1755 p146):-

"It is easier to discover the beauty of Greek statues than the beauty of nature ...  
Imitating them will teach us how to become wise without loss of time."

#### **2.42 Aesthetics: From German Idealism to "Art for Art's Sake"**

The extent of the influence of these archaeological discoveries is disputed by some writers, but the work of Winckelmann is widely accepted as the first to combine the study of art history with the theories of aesthetics.

Whilst England was still under the influence of the rational empiricism of Locke, Berkeley and Hume: German writers were looking at Winckelmann through the eyes of Rousseau, and of Kant, the founder of German "Idealism"; described by Russell (p677):-

"German Idealism has affinities with the Romantic movement ... In Kant, and still more in Fichte (1762-1814), the subjective tendency that begins with Descartes was carried to new extremes."

German authors around 1800 began to discuss art in terms of their "Idealism"; that things do not exist in reality independently of the human mind, but are variously creations of the mind or constructs of ideas. Sultzner (1771 p88) wrote of the "high value and divine power of the arts"; and Schiller (1800) writing of the ideal freedom of the human spirit, concluded that "artists live on the summit of mankind", and that "...The aesthetic state is the highest state of mind and soul which the individual can achieve". And Heinrich Meyer (1799 p10) a friend and pupil of Goethe, summarised the romantic ethos:-

"Art must feel free and independent, it must rule, as it were, if it is to thrive; if it is ruled and mastered, it is bound to decline and vanish."

The establishment of a concept of "Aesthetics" represents the meeting point of the Romantic/Classic axis. It demands the control and structure of classicism to be combined with the independence and freedom of the romantics.

There has always been an 'aesthetic' element in art, in the actual 'plastic' elements of line, form, and colour. Sometimes it was only an unwritten convention, sometimes the aesthetic element imposed itself, or was imposed on the whole style of work, including its content and subject matter.

Our word aesthetic comes from the Greek "Aisthetikos", meaning "perceptible to the senses"; but our use of the word has grown to include "good taste, pure beauty, and the criteria for the rules and principles of art". By the second half of the nineteenth century, the ideals of classical Greece had been adopted by the academies, processed by German philosophers, and translated by a Frenchman, Gautier, and an Englishman, Pater, into an elitist doctrine based on "Art for Art's sake"; which was then imposed on all aspects of Victorian high culture. By 1870 a distinct 'Aesthetic' movement had begun in Britain with the high-minded ideal of bringing beauty back to the world.

All academies were concerned with the quest for beauty, but differed in their approach to it. One classical theory came from the rational mathematical approach, that beauty lay in the harmony of proportion; and reached its high point in the sculpture of Praxiteles; the other thought of beauty as an ideal, as expressed in the paintings of Raphael. Within the French Academie, David and Ingres disapproved of the irrational search for absolute beauty, Ingres (1780-1867):-

"... ideal beauty? Nonsense of that sort is responsible for the decadence of art in the worst periods of its history." (in Goldwater and Treves, 1945 p216).

This contrasted with the earlier English approach expressed by William Hogarth (1697-1764). In his book "The Analysis of Beauty" (1753), Hogarth attempted an objective analysis of subjective responses to art, which was quite in keeping with the rational, empirical attitude of his times. Subtitled "Written with a view of fixing the fluctuating

IDEAS of TASTE", the book set out to quantify the laws which he believed governed our responses to art by analysing the process by which certain forms appear pleasing and others do not: and how even elegant forms can "excite disgust if they are misapplied". He even produced an elegant 'S' shaped line which he called the essential "line of beauty".

This academic concern for ideals of beauty being the essence of art was echoed by Hogarth's contemporary and great rival Joshua Reynolds (1723-92):-

"... the ideal ... that central form ... from which every deviation is deformity."  
"... perfect beauty in any species must combine all the characters which are beautiful in that species ..." (1795 p185).

## **2.5 Industrial Art: The Rise of Design**

The early nineteenth century was one of the most complex and interesting periods in the history of 'culture', and a most difficult time for a historian to unravel the extent and direction of any influence. There have been civilisations in the past when society and its culture have been a unified whole, Aztec, Mayan, Egyptian, but this period was a time of the break-up of old values, which were conflicting with new and diverse aims.

The **socio-political** situation in France challenged and influenced the whole of Europe for thirty years.

The **socio-economic** situation in England was to prove in the long term even more influential through the commercially driven Industrial Revolution and subsequent vast urbanisation.

The **socio-scientific** situation included new theories in mathematics, physics and medicine which destroyed old myths; and there were developments in engineering which transformed transport and communication.

The **socio-cultural** situation involved the cross fertilisation of ideas and disciplines from literature through art and music, with the art scene dominated by the Classical Academies and the new free market of the Salons.

Further complications were introduced by the rise of the 'Designer' brought about in Bayley's words (1985 p13) "by the fusion of culture and industry". The need for trained designers for the mass produced items required by the rising middle class consumers provided the next great change in the structure of art education.

The provision of art education for designers proved to be a permanent reform of the art schools, and the two stream separation of 'Fine' and 'Applied' art is still in operation even today.

Before Colbert and Lebrun initiated the divorce of artists from the craft guilds, a unity had existed between design and execution. Artists of the Renaissance tackled many diverse projects, from costume and set designs for festivals, to great architectural schemes. Leonardo (1482) in his famous letter to the Duke Sforza in Milan, listed all his skills and attributes, from military inventions to civil engineering; painting came a mere eleventh on the list.

The Enlightenment tried to improve 'academic initiation' of the trades, resulting in an immense growth in the number of art schools after 1750, mostly to serve trade interests. This growth continued in the nineteenth century, with the emphasis on technical education. By 1811, the restrictions of the guilds had been abolished by decree in all the European countries, machines had superseded the craftsman, and profit became the prime motivation.

The late eighteenth century saw a complete reversal of the 'Lebrun' ideal of separating the artist from the artisan, in some cases the new zeal to help commerce and the trades went so far as to produce a system by which the academy established a supervision of the guilds. This system was guided by the simplistic theory that the activity of the industrial artist was nothing but the translation of drawings into different materials with the aid of different tools.

Pevsner (p115) identified in the foundation documents of some of the new academies, the importance of commerce and the provision for training "designers", Dresden (1763):-

"Art can be looked at from a commercial point of view ... while it rebounds to the honour of a country to produce excellent artists, it is no less useful to raise the demand abroad for one's industrial products."

Also the memorandum for the Berlin Academy of 1770, included comments:-

"The academy could easily help commerce and those craftsmen who work to designs. The staff should always think of a possible application of their teaching to trades such as printing, tapestry weaving, wallpaper printing, embroidery, porcelain decorating, and glass blowing."

These examples from Germany were echoed all over Europe; the opening advertisement for the Foulis Academy in the Glasgow Evening Times included the inducement:-

"drawing ... is so useful in manufactures", and several small art schools were set up specifically to help the trades.

Britain, which had been the first country to fully develop the capacity of the machine, was the first country to face up to the pernicious consequences of the Industrial Revolution, both social and artistic. In the first half of the century, protests against the horrors of the Industrial Revolution were common, starting with Cobbett (1807). Most influential were the writings of Thomas Carlyle, who in 1829 attacked the prevailing idea "that the current economic policy could not afford to be burdened with concern for the poor and should only be influenced by the law of supply and demand". Fuelled by the writing of Dickens et al, the social horrors of mass urbanisation were a major issue throughout the Victorian era, culminating in Engels (1884):-

"Here live the poorest of the poor ... sunk in the whirlpool of moral ruin which surrounds them ... losing daily more and more of their power to resist the demoralising influence of want, filth and surroundings."

The root of the artistic problem lay in the fact that the design of mass produced items lay in the hands of people with little aesthetic sensibility or judgement. This was highlighted in Pugin's 1836 seminal work "Contrasts", the title page of which contained a series of mock advertisements which illustrated the position of informed opinion in Britain; for example:-

- Wanted an Errand Boy for office who can design occasionally.

- Design taught in six lessons ...
- Designs wanted: A Saxon Cigar Divan.

In 1835 a Parliamentary Commission was set up in Britain to "... inquire into the best means of extending a knowledge of the arts and the principles of design among the people (especially the manufacturing population)". This Commission recommended the adoption of the continental system of 'municipal drawing schools' and proposed the "Normal School of Design" which was opened in London in 1837. A further sixteen provincial drawing schools were opened over the next few years.

The watershed for art and design education in nineteenth century Britain is considered to be the Great Exhibition of 1851. With Royal support this was an opportunity for all nations to display their outstanding work. To the Victorians, so proud of their achievements in so many areas, the paucity of their design exhibits was quite alarming and even the official reports of the exhibition highlighted the need for better training for industrial artists.

Henry Cole had visited the Paris Exhibition of 1849, and he conceived a major trade exhibition, to be held in a giant 'Crystal Palace' in Hyde Park, as England's answer. He persuaded Prince Albert to support the venture, as an attempt to improve public 'taste'. The building was designed by Joseph Paxton as a demonstration of new engineering skills, which used steel in an utterly functional, undecorated manner. The palace was constructed entirely in metal and glass and completely pre-fabricated. It was a magnificent statement of the power and commitment of Victorian technology.

Unfortunately it was filled with countless exhibits which demonstrated the worst aspects of consumer-driven choice; over-decorated objects which provoked a storm of protest. Even The Times complained about "sins committed against good taste". Bayley (1985 p22) quoting Pugin:-

"... industry appeared to be out of control: the mass-produced objects were scarred by vulgar and inappropriate ornament and too many of them were concerned with extravagance which concealed their true purpose."



Sparke (1987 p63):-

"The manufactured objects exhibited at the Great Exhibition displayed a general enthusiasm for ornament for ornament's sake and an overall neglect of any fixed principle of design, other than those motivated by the market place."

One of the long-term results of this display of the mediocrity of 'state of the art' design, was a series of articles and books which elucidated two main themes, that machine made objects should display a "fitness for purpose", and that motifs of decoration should be drawn from nature and should be appropriate to the form and function of the object.

Bayley (p23):-

"With all the moral certainty of his age, Cole and his colleagues set out to look for some aesthetic certainties. They were absolutely sure that they knew what was good and what was bad in design, and what was bad was lack of symmetry, disregard of structure, formless confusion and superficial decoration."

Pevsner identifies the writings of the German architect Gottfried Semper (1852) as being the most important contribution to the future of industrial art in the second half of the nineteenth century. Semper lived and worked in England and was asked to publish his thoughts about the work in the Great Exhibition.

He believed that the invention of the machine was not responsible for the decline in standards of industrial art, and called for differentiation between an indiscriminating and a reasonable use of the machine. He further pleaded for a reform of art education, claiming that tuition in Fine Art and Decorative Art should not be separated. He also proposed to educate the taste of artists, manufacturers and the public by providing Museums of Decorative Art which would contain outstanding examples of historical craftwork, and be centres of public learning through lectures and workshops.

Other writers supported these views, including Pugin and Owen Jones, who both laid down the fundamental criterion of industrial and decorative art, "... to afford perfect pleasure, every object must be fit for the purpose and true in its construction."

As a direct outcome of Semper's proposals and with the support of Prince Albert, the

Department of Practical Art (Secretary, Henry Cole) had founded a museum and a school of design. The museum grew in stature and influence, and so Cole founded a larger museum in South Kensington (1857) which became the present Victoria and Albert. The school of design unfortunately declined; perhaps because its classes were principally drawing from objects, for it was still universally agreed that to copy on paper was the only worthwhile method for teaching artists or designers. Typical examples of this attitude were the comments of some contemporary writers quoted by Pevsner (p257):-

Springer:- "As the same faculties cause inventive power in art and applied art, the same education is to be imparted."  
von Edelberg:- "... industrial art is but the application of (Fine Art) to the needs of everyday life."

However, the provincial drawing schools continued to flourish in Britain, and by 1884 there were 177.

## **2.51 The Arts and Crafts Movement**

In the latter part of the nineteenth century "Design" in Britain became a major cultural as well as an industrial factor, and so became much more involved with morals and ideology. Much of the theory came from the writings of Carlyle, Pugin and John Ruskin (1819-1900), all "High Tories" who despised both the middle classes and increasing urbanisation. These ideas were taken up by the Oxford Movement and exemplified by their leader, William Morris (1834-96), who became the most celebrated designer of the age. His ideas were an unusual fusion of classical ideal beauty, and the romantic freedom and independence of the individual, wrapped up in a naive misconception of life in the middle ages. His aims were more cynically described by Bayley (p27):-

"... to establish a simple and rational way of life ...  
basically an exclusive and elitist pseudo-medieval fantasy world."

Bayley cites:- "Forget the spreading of the hideous town:  
Think rather of the pack-horse on the down." as a demonstration.

Morris brought about the revival of the handicraft tradition and provided the role model for later artist-craftsmen, but he was unable to create his ideal of the medieval atmosphere in his workshops, where economic realities forced him to practice the despised 'division of labour'. Nevertheless he was ranked by Pevsner (p 260) as :-

"... the most influential personality of the nineteenth century ... and the supreme prominence for the history of art in its most general sense."

Out of the Pugin, Ruskin, Morris axis grew the Arts and Crafts Movement, described by Naylor (1971), as "... reacting to the facts of life in a machine age." In the words of the movement's chief practitioner, C. R. Ashbee (1863-1942), industry had debased ornament and design, and man needed to return to an earlier work-ethic. This was only to be found in the workshops of the Middle Ages, when man was supposed to be in harmony with his labour, and work was a continuous idyll of happy, wholesome, uplifting handicraft. These new craftsmen aimed to produce furniture and artefacts inspired by the values of 'truth to materials' and 'fitness for purpose', with honesty of decoration derived at all times from nature. Underlying the practical work was a socialist utopian ethic which hoped to reform society through art and design.

The Arts and Crafts Movement lasted from 1860-1900, but once the craft instruction aspect had been adopted by the art schools and absorbed by the existing trade courses, no further progress was made in Britain. In the words of C. R. Ashbee:- "the Movement hesitated, halted and broke down."

## **2.6 Nineteenth Century Art Academies**

Meanwhile, though there were great changes occurring outside the major academies, inside there was dogged resistance to criticism and radical thinking.

When the French Revolution terminated the "Ancien Regime" politically, and the philosophical and artistic movements known as Romanticism finished it spiritually, the existing system of art education also appeared to be doomed. The

German painter Carstens in his letters from Rome to Heinitz in 1791, put forward the first comprehensive criticism of the academic system:-

"When there were no academies, great artists lived and were encouraged by the powers of their time to use their genius on great works, whereas academies have caused Art to deteriorate until it has become content with working at head and tail pieces in books."

"There can be no doubt that in all countries, academies of art do harm in many directions."

Support came from Henry Fuseli (1741-1825):-

"All schools of painters, whether public or private, supported by patronage or individual contribution were, and are, symptoms of art in distress, monuments of public dereliction and decay of taste."

After the restoration of the Bourbons, the French academy was renamed in 1816 by Louis XVIII as the "Academie des Beaux Artes". However, though the organisation was unquestionably new, the teaching methods remained unaffected by either the revolution or the Neo-classic movement.

The subsequent influential character in the history of the French academy was J.A.D. Ingres (1780-1867), director of the Rome Academy from 1834, and the Paris Academy from 1850.

The internal structure of these academies was divided into two separate units, the main Academie for elected adults, working, exhibiting, and influencing the mainstream of art, and the 'Ecole des Beaux Artes', which trained young students. This system became the model for the rest of Europe, and its popularity was such that an entrance examination was introduced which lasted four weeks, and included perspective, anatomy, life drawing, design and history.

Sultzer (1792 Vol.I p 12) described the structure of a normal academy:-

"The academy must be well supplied with objects necessary for learning the art of drawing ...  
- books of drawings showing separate parts of figures ... to copy these is the first task of the beginner."

- drawings of figures taken from outstanding works of art to be copied by the student.
- a stock of plaster casts, representing the noblest works of antiquity, some in parts and some complete ...
- live male models of beautiful form to pose in different attitudes as instructed by one of the leading teachers."

Seeger (1800 p78-104) described the routine timetable of the Berlin Academy:

		AM		PM
Monday	7-9	Drapery	2-6	Drawing and painting in the picture gallery
	8-12	Drawing/painting in the picture gallery	5-7	Life-drawing
Tuesday	7-9	Drapery	2-5	Architectural drawing or picture gallery
	10-12	Perspective	5-7	Life-drawing
Wednesday	7-9	Drapery	2-5	Drawing from drawings
	8-12	Drawing from casts	5-7	Life-drawing
Thursday	7-9	Drapery	2-5	Architectural drawing or picture gallery
	8-12	Drawing from casts or perspective	5-7	Life-drawing
Friday	8-12	Drawing and painting in picture gallery	2-6	Drawing and painting in picture gallery or drawing from casts
			5-7	Life-drawing

Advanced students had to attend the following classes, with a two hour lunch break:-

Monday	8-6	Painting in the picture gallery
Tuesday	7-10	Drawing from casts
	10-12	Perspective
	2-5	Architectural drawing
	5-7	Life-drawing
Wednesday	7-9	Drapery
	9-5	Drawing from drawings
	5-7	Life-drawing
Thursday	7-10	Drawing from casts

	10-12	Perspective
	2-5	Architectural drawing
	5-7	Life-drawing
Friday	8-6	Painting in the picture gallery
Saturday	7-9	Drapery
	9-5	Drawing from drawings
	5-7	Life-drawing

## 2.61 Criticism of the Classical Academies

Although the outstanding young students were admitted to the academies, a great many enthusiasts who were to become famous were trained in the "ateliers" of contemporary masters. In 1863 Monet, Renoir, and Sisley all entered the Paris studio of Charles Gleyre (1808-74). Monet (1921) described the teaching:-

"... Greyre criticised my work ...  
'I can only draw what I see' I replied timidly.  
'Praxiteles borrowed the best elements from a hundred imperfect models to create a masterpiece' retorted Greyre.  
That evening I took Sisley, Renoir ... and said to them,  
'Let's clear out of here. The place is unhealthy. There is absolute lack of sincerity.'  
We left after two weeks ... We were well rid of it."

A description of the actual physical situation in one of these 'private' academies is given by Emile Zola in "L'Oeuvre" (1886 p78):-

"The studio was ... a huge outhouse of board and plaster ... four long tables ranged lengthwise to the windows - broad double tables they were, with crowds of students on either side (some sixty). They were littered with moist sponges, paint saucers, iron candlesticks, water bowls, and wooden boxes in which each student kept his brushes, his compasses and his colours. The walls ... were topped with shelves displaying a litter of plaster casts ... sometimes hidden behind forests of T-squares, bevels, and piles of drawing boards ..."

Throughout the nineteenth century there was general criticism of the art academies by the Romantic artists, reported by Pevsner (p201-2):-

Pforr:- "seminaries of bad taste."

Schlick:- "a hospital of sick art."  
 Caspar David Friedrich:- "machine-like practicing."  
 Koch:- "infirmary for incurables", "a poor house", "a rotting cheese .."  
 Girodet-Trioson:- "Rome Academy ... a fold for 12 sheep."  
 Ludwig Richter:- "you just learned contours and pretty hatching."  
 "... to draw foliage ... take a slip of paper, fold it into a fan ...  
 there was foliage."

Also Pevsner (p239):-

Ruskin:- "Until a man has passed through a course of academy studentship ... we do not think of him as an artist ... whereas the real gift in him is utterly independent of all such accomplishments."  
 Whistler:- "Whom the Gods wish to make ridiculous, they make academicians."

In Germany, this criticism did bring about significant changes in art education, the most important of which was the attachment of a group of students to one single teacher.

## 2.62 German "Meisterklassen"

Pevsner cites the birth of this new relationship between teacher and pupil, as evolving from the "Nazarene" Movement, which began with the opposition of Pforr and Overbeck to the Vienna Academy in 1805/6. The movement grew in size and influence in Germany, with its ideas developed principally by Cornelius, and implemented by Wilhelm Schadow, who was appointed Director of the Dusseldorf Academy in 1826, and developed an art education system which gradually modified the European academies.

The substitution of 'fatherly care' for 'academic routine' was given official support by the great architect Schinkel, who recommended in 1818 that the "routine of academic classes be replaced by 'workshops', where the masters would teach their pupils." This theory of "Meisterklassen" was to be the great German contribution to nineteenth century art education. As a direct result of the Romantic influence in Germany, the constitution of the Munich Academy in 1808 read:-

"The teacher shall not suffer any uniform mechanism, but leave to the pupil as much freedom as possible to show his particular talent and the special qualities of his manner of looking at objects and imitating them."  
 Pevsner (p 213).

A further innovation at Munich was the introduction of a special class for "instruction in the use of colour".

The artist, Wilhelm Wach had studied in Paris at the private studios of J. L. David and J. A. Gros, and it was he who brought their progressive teaching system, based on the medieval Italian studio-workshop, to the Berlin Academy.

It can be assumed that all these ideas were actually influential in the development of the Dusseldorf system, as Wach and Schadow were associates. The new "rules" of 1831, reported by Pevsner (p217), divided the Dusseldorf Academy into three classes:-

Elementary:- to teach children from the age of twelve to draw from drawings and plaster casts of parts of the human head and body.

Preparatory:- students worked from plaster casts and from life, connecting the two as closely as possible.

Top Form:- students were encouraged to carry out their own compositions, and were allowed to choose the professor under whom they wanted to work.

The Nazarenes, forerunners of William Morris and company, dreamt of the spirit of the community and brotherhood of the medieval workshop, and tried to restore this system by their "master-classes". Germany was the only place which actually achieved the destruction of the old academic system; replacing it with a purely individualistic system; divorce rather than a new unity.

## **2.7 Twentieth Century Schools of Art and Design, Deutscher Werkbund**

The other significant development in Art Education also took place in Germany, and was to have a profound effect throughout the western world in the twentieth century. It would be quite wrong, however, to assume that these ideas occurred in isolation. They evolved within an international context, and in particular they reflect a specific British influence.

By the 1880s Europe had become once again politically and economically stabilised. The



Franco-Prussian war had ended and the Germans had evacuated from Paris. Many artists, including Monet and Pissarro, who had fled before the fighting, returned to their homes. There was a great increase in the number and exchange of periodicals and exhibitions, and Art and Design were returned to an international context.

In spite of our present day preoccupation with the Impressionists and Post Impressionists as being the significant art movements of the late nineteenth century, the dominant European art expression of the day was "Art Nouveau" which for twenty years from 1890 to 1910 dominated contemporary architecture, product design and illustration. The leading German architects of Art Nouveau (Jugendstil) were all under the theoretical influence of the English Arts and Crafts Movement. In 1903 Herman Muthesius, who had spent seven years studying in England, was made Inspector of Arts and Crafts for the Prussian Board of Trade, and immediately appointed several leading architects, including Peter Behrens, to re-organise the art schools. The specific German influence on the future of art education was that whilst retaining the natural forms and truth to materials of the Arts and Crafts Movement, they dropped the William Morris total commitment to handicraft, and accepted the inevitability of the machine, producing designs specifically for mass production.

Muthesius was also one of the founding members of the "Deutscher Werkbund", a fraternity of craftsmen, architects, and industrialists, formed in 1907 and dedicated to the reform of the applied arts. It was, in Pevsner's words, (p271):-

"... the first organisation which put standards of industrial art above standards of handicraft."

The Werkbund strengthened the new attitude to the machine by bringing together architects and manufacturers. It was an association described by Campbell (1980 p116):-

"... founded for educational and propaganda purposes, intended to unite business, arts, crafts and industry."

The Werkbund reached its peak of influence after its exhibition of 1914 in Cologne. By

then it had almost two thousand members and preached a curious doctrine of nationalistic patriotism, combined with opposition to the aestheticism of Art Nouveau; with the clear aim of establishing a unified direction for German art and industry.

Its progress was interrupted by the First World War, and also by the acrimonious debate between Muthesius and Van de Velde which divided the movement into 'standardisationist' or 'individualist'. Adams (1987 p120):

"Muthesius held that design should be standardised to accommodate mass-production ... above the individual creative whim of the designer. Van de Velde, in contrast, upheld individualism and the creative autonomy of the designer."

## **2.71 The Bauhaus**

One of the main supporters of the Van de Velde position was the architect Walter Gropius (1883 - 1969), perhaps the single most important figure in twentieth century art education.

Gropius, a pupil of Peter Behrens, was appointed Principal of the Weimar School of Art in 1914, but served in the war. His appointment was confirmed by the Thuringian government after the socialist revolution of 1918, and he re-opened the art school and the school of arts and crafts, combined as the "Staatliches Bauhaus" in 1919. The reputation of Gropius as an architect is secured by the innovative buildings he designed; his position in the history of art education is less clear. As the figurehead and founder of the Bauhaus he has historical importance, but his position as the evangelical leader of the experimental 'modern movement' in art education has in recent years been under question. Gropius' situation is perhaps summed up in the military leader paradox: "a bad commander sometimes has a good staff, but a good commander never has bad staff". Though one member of his staff, Oskar Schlemmer (1921) was a little more cynical in his description:

"... Gropius is an outstanding diplomat, a businessman and practitioner; he runs a large private practice from inside the Bauhaus, and the commissions are villas for Berliners." (in Whitford p203)

Yet even Schlemmer mellowed over the years. An entry in his diary (published in 1972) reads:-

"... the actual structure of the Bauhaus finds expression in its leader and is not restricted to any dogma, with an awareness of all that is new and topical in the world and with good motives for assimilating it."(p186)

The ideology of the Bauhaus is apparently very simplistic, with its roots in classical Greece, and the ideal of the medieval work-ethic combined with Plato's Utopia. The actuality was made much more complex by the attempt to incorporate individual creative expression.

The international influence of the Bauhaus was immense, in spite of the fact that very few graduate students achieved much status. The reputation of the Bauhaus is in reality founded on the quality of the staff, and the innovation of their individual teaching. The general situation in the world of art prior to the establishment of the Bauhaus was diverse and revolutionary, and was certainly a contributing factor to the development of the institution. In the words of Alexander Dorner (1938 p10):

"(Europe) presented a bewilderingly confused picture."

The established traditional academies were still powerful bodies with influence over state patronage and the bourgeoisie' and were directly opposed by a whole range of 'avant-garde' movements: France had 'Cubism', 'Fauvism', 'Purism', 'Dadaism', 'Surrealism'; Germany 'Expressionism', 'Dadaism'; Holland 'de Stijl'; Italy 'Futurism'; and Russia 'Suprematism', and 'Constructivism'. Virtually the only things these revolutionary movements had in common was their belief in the individual's right of self-expression, and their opposition to the academies. This culmination of the nineteenth century Romantic movement reached its zenith in post-war German Expressionism.

Herbert Read (1959 p50):-

"The visual arts ... are deeply involved, both as cause and symptom, in the general process of history. The arts ... give plastic precision to inhibitions and aspirations that would otherwise remain repressed and voiceless ... The origins of the Expressionist movement in Germany illustrate this fact very forcibly."

Whitford (1984 p26):-

"The ideas which the Bauhaus attempted to realise are related to Expressionist notions in several important ways ... Expressionism urged social change and even revolution; these were to flow naturally out of the profound change in human consciousness. Art, the Expressionists fervently believed, could change the world."

The influence of thinkers in industrial education has already been discussed in this context, but it must be allied to the influence of contemporary visual artists, for it was the placement of the training of 'designers' under the control of artists that was one of the great innovations of the Bauhaus, and the staff list of the school reads like a "who's who" of modern art:

Wassily Kandinsky	(1866-1944)	Russian
Paul Klee	(1879-1940)	Swiss
Lyonel Feininger	(1871-1956)	USA
Theo van Doesburg	(1883-1931)	Dutch
Josef Albers	(1888-1976)	German
Johannes Itten	(1888-1967)	Swiss
Miles van der Rohe	(1886-1969)	German

with visiting lecturers including:

El Lissitzky	(1890-1941)	Russian
Naum Gabo	(1890-1977)	Russian
Wilhelm Ostwald	(1853-1932)	German

Nevertheless, there was great opposition to the Bauhaus throughout its existence, and the life-span of the Bauhaus was almost precisely that of the Weimar Republic, born in 1919 and surviving until the appointment of Adolf Hitler as German Chancellor in 1933. The extent and persistence of this opposition can be seen in a simple chronology of events.

1919	March	Gropius confirmed as Director of the "Staatliches Bauhaus in Weimar".
	April	Appearance of first "Manifesto" (Appendix 2.4).
	June	First meeting of Council of Masters.
1920	January	First students admitted, 78 male and 59 female.

1921	April	Fine Art split. New State Academies formed.
1924	February	Social Democrats lose Thuringia election.
	September	Notice served on all masters.
	November	Budget cut from 146,000 to 50,000 rm.
	December	Bauhaus dissolves itself.
1925	March	Dessau Municipal Council votes to take over the Bauhaus in its entirety.
1926	January	Bauhaus recognised as "Hochschule fur Gestaltung" (academy for creative arts' institute for design) with 63 students.
	December	Dedication of new building Budget granted for 100,000 rm, 83 students.
1928	January	Students demand stronger pedagogic orientation
	February	Gropius resigns.
	April	Hannes Meyer appointed Director: 166 students
1930	January	Meyer forced to resign by the Mayor of Dessau Mies van der Rohe appointed Director.
1931	November	Nazi party win control of Dessau Council
1932	October	Council dissolve the Bauhaus Mies attempts to run the Bauhaus as a private institute in Berlin, 168 students.
1933	April	Nazis order the building searched, 32 students arrested.
	July	Faculty of masters dissolves the Bauhaus.

The closure of the Bauhaus was in Whitford's words, (p9):-

"... the first tangible expression of the (Nazi) Party's cultural policy, or its determination to remove from Germany every trace of what it called 'decadent' and 'Bolshevistic' art."

Details of the opposition are well documented in the Bauhaus Archive, Berlin, and the Thuringian State Archive, Weimar. The protests began almost as soon as the school opened; Dorner (p9) reports a poster campaign in January 1920 (see Appendix 2.5):

"Men and women of Weimar!  
Our old and famous Art School is in danger!  
All citizens of Weimar to whom the abodes of our art and culture are  
sacred, are requested to attend a public demonstration on Thursday  
January 22nd at 8 pm.

The "Association for the Protection of German Culture in Thuringia", placed the  
following announcement in the "Weimarische Zeitung" on July 6th 1924:

"We protest at the continuing existence of the State Bauhaus. We protest  
against State support for such an institution ...  
... all the schizoid scribblings, and experiments in embarrassment which  
we find in exhibitions and publications ... are decadent values, theatrically  
inflated into art by the director and Masters of the Bauhaus, and lacking  
artistic creativity. They have nothing to do with genuine art. Such a  
bloodless, diseased artistic instinct ... is assisting the collapse of our  
culture."

Even after the move to Dessau, the "Anhalter Anzeiger" published a highly critical  
leading article, May 7th 1930:

"Had you visited Weimar, the ancient city of Goethe ... wishing to derive  
strength and spiritual sustenance from the classic sites of German art ...  
you would have met, increasingly often, youths, mostly in gangs, with  
flowing black hair and legs like gooseberries, who introduced a Russian  
element into the civilised quiet ... linked closely with the red star of  
Bolshevikia ... They're students at the Bauhaus - you know what I mean!"

These disputes were themselves considered newsworthy items, producing streams of  
media headlines (see appendix 2.5):

"Storm over Weimar". "Bauhaus Scandal", "Save the Bauhaus", "The  
Menace of Weimar", "The Art War in Weimar", "Staatliches Rubbish",  
"Cultural Demolition in Weimar", "Cultural Fight in Thuringia", "Assault  
on the Bauhaus".

also within any experimental institution there are invariably internal disputes, some of  
those from the Bauhaus were reported by Whitford (p 203-9):- Oscar Schlemmer  
December 1921 complained:-

"There is a crisis at the Bauhaus... Itten has introduced Mazdaznan teaching..."

Then Schlemmer again in March 1929:

"People - the students, me, too - are dissatisfied with Hannes (Meyer) because of his rough manner and lack of tact. The atmosphere in the school is not good."

Even Gropius himself was forced to admit, February 1923:

"The artistic presumption which we wanted to suppress is more rampant than ever."

The early students at the Bauhaus came from all over Germany and Austria, with a handful from Hungary and the Baltic states. They were mostly in their early twenties but ranged from 17 to 40 years old, and two thirds of them were men. Arndt (1968) published the collected reminiscences of former "bauhauslers":

"In 1919 in the midst of political strife and unimaginable economic plight, young people, mostly men came to the Weimer Bauhaus. The majority still wore soldiers' uniforms which the girls made look "civilian" by dyeing them and removing the collars.

Many came from the "wandervogel" movement, wore long hair which to everyone's amusement, they had cut off later at a Bauhaus dance ... the baldness stimulated ideas, such as painting one's shaven head with black squares for a party." (p311).

Bayer (1938 p18) reported a student's letter:

"I made enquiries as to what the Bauhaus really was. I was told that during the entrance examinations every applicant is locked up in a dark room. Thunder and lightning are let loose on him ... His being admitted depends on how well he describes his reactions. This report ... exaggerated the actual facts."

"The happiness and fullness of those years made us forget our poverty. Bauhaus members came from all social classes. They made a vivid appearance, some still in uniform, some barefoot or in sandals, some with the long beards of artists ..."

Some students found the teaching difficult to comprehend, Selman Selmanagic reported by Whitford ( p210) :-

"While I was in the life class one day someone who could draw the model's every eyelash was sitting next to me. He had been to the academy. I looked at the model and then at his drawing, and thought; you could never do that. Then Paul Klee came up ... praised me and said that my neighbour should learn how to draw from me. Then I thought: what kind of school is this - I can't draw and he should learn drawing from me?"

The concept of the Bauhaus was the culmination of contemporary theories of art education and art and craft practice. Yet even the aims of the school changed during its lifetime, the left-wing views of Hannes Meyer introduced an emphasis on the social aspects of art and design, which were in turn rescinded during the directorship of Mies. Even the principles of Gropius had to be modified to cope with the realities of survival in a time of great social, economic and political upheaval.

### BAUHAUS THEORY

In April 1919, Gropius published a four page leaflet, "Manifesto of the Bauhaus", which proclaimed (Appendix 2.4):-

"The ultimate aim of all creative activity is the building!"

"The decoration of buildings was once the noblest function of the fine arts, and the fine arts were indispensable to great architecture. Today they exist in complacent isolation.

The old art schools were unable to produce this unity ... Schools must be absorbed by the 'workshop' again ... If a young person who takes joy in creative activity begins his career now, as he formerly did, by learning a craft, then the unproductive 'artist' will no longer be condemned to inadequate artistry, for his skills will be preserved for the crafts in which he can achieve great things."

"Architects, painters, sculptors, we must all return to crafts!

"There is no essential difference between the artist and the craftsman ... a foundation of handicraft is essential for every artist.

It is there that the primary source of creativity lies."

"Let us therefore create a "new guild of craftsmen", without the class distinctions that raise an arrogant barrier between craftsman and artist!

Let us together desire, conceive and create the new building of the future ... which will one day rise towards the heavens from the hands of a million workers as the crystalline symbol of a new and coming faith."

Though many of the aims as expressed by this manifesto were forced to change, the two main planks of Bauhaus theory that held off all pressures, were that the fine arts and crafts were not fundamentally different activities, but were two varieties of the same thing; and the basic concept of the value of "form", derived directly from Vitruvius :-

"The perfection of all works depends on their fitness to answer the end proposed and on principles resulting from a consideration of Nature itself."



This became the ultimate Bauhaus slogan "Form follows Function".

## TEACHING METHODS

The basis of Bauhaus teaching methods was the attempt to impose a system of tandem teaching, students were instructed by "Workshop Masters" who were to teach technical skills, and "Masters of Form", fine artists who were to teach understanding of the plastic elements of art, line, form, colour, and individual self expression. This innovation was unfortunately not a success. Disputes were frequent, and the gulf between art and craft, which Gropius aimed to remove, remained as wide as ever.

Undoubtedly the most influential and important teacher at the Bauhaus was Johannes Itten (1888-1967). Originally an elementary school teacher trained in the Froebel method, he had developed an unconventional system based on the ideas of Pestalozzi, Montessori and Franz Cizek. Itten persuaded Gropius to introduce a "Vorkurs", a Preliminary Course, which also served as a probationary period. The primary aim of this course was to make the student receptive to new ideas and methods, and thereby liberate their dormant creative potential. It was this course that distinguished the Bauhaus from all other schools in Germany; and it is the one system that has been adopted by art schools throughout the world, and is still in operation more than seventy years later.

Itten (1930 p37) described his aims:-

"... my instruction was not aimed at any specially fixed external goal. The individual himself ... development of the senses, heightening of intellectual abilities and emotional experience ... are the ways and means of the ... responsible teacher ... permit him deeper insight into the possibilities, talents, mentality, sensibilities, and creative powers of the student."

The purpose of all education for creative artists is to convey the general regularities of form and colour and to increase the student's creative force of expression."

Otto Stelzer (1968 p35) described the origin of the preliminary course:

"Such instruction is in the true tradition of romanticism, the first "preliminary course teacher" was the master in Novalis' "Apprentices of Sais" (1799).

Behind Nouvalis looms Rousseau who let his "Emile" (aristocratic background) learn a trade: "if ... I keep a child busy in a workshop, his hands work to the advantage of his mind: he turns into a philosopher, even though he considers himself only a craftsman."

Major contributors to the Bauhaus course were Kandinsky and Klee; and after the departure of Itten, in 1923, another great teacher Moholy-Nagy was appointed, assisted by Josef Albers. Moholy was a very different personality from Itten, less mystic more practical, and he achieved greater unity within the workshops. He was also a great supporter of the other great Bauhaus innovation, the "integration of subjects", that is the rejection of specialisation. The students had to follow a "modular" course, and try different materials and techniques.

Separating myth from reality is often a difficult task even with a subject as well documented as the Bauhaus; these two quotations give some idea of the paradox.

L. Moholy-Nagy (1946 p63):-

"Why is the Bauhaus so important?

- 1 Because it courageously accepted the machine as an instrument worthy of the artist.
- 2 Because it faced the problem of good design for mass production.
- 3 Because it brought together ... artists of ... talent.
- 4 Because it bridged the gap between the artist and the industrial system.
- 5 Because it broke down the hierarchy which had divided the "fine" from the "applied" arts.
- 6 Because it differentiated between what can be taught (technique) and what cannot (creative invention).
- 9 And finally, because its influence has spread throughout the world ..."

Whitford (1984 p45):-

"... controversies and lack of facilities demoralised many students who had enrolled with high hopes ... The school itself was in a shambles ... The only truly positive thing about the Bauhaus from the students' point of view was the canteen ... The canteen stayed open in the evening and provided staff and students with at least one nourishing meal a day ..."

"These difficulties go far in explaining why theory loomed so large at the Weimar Bauhaus: theory requires fewer facilities than practice." (p50)

After the final closure of the Bauhaus in 1933, many of the staff emigrated. Gropius worked for a while in England in association with the architect Maxwell Fry, but the general exodus was to the USA where Bauhaus principles and teaching methods were adopted by a number of higher education institutions. Most influential were the "New Bauhaus", the "American School of Design" in Chicago, directed by Moholy-Nagy; the "Black Mountain College" in North Carolina under Josef Albers; and the Harvard University Department of Architecture directed by Gropius and Marcel Breuer.

The ideas and work of the Institute of Design in Chicago were summarised and presented by Moholy-Nagy in one of the most important twentieth century books on art education, "Vision in Motion" (1946 p 63):-

"Today for most people formal education merely means an abbreviated, intellectually consensed form of other peoples' experiences, the result of which can easily be utilised to earn one's living."

"The Institute of Design, Chicago, is a laboratory for a new education ... it embodies the principles and educational methods of the Bauhaus modified in accordance with the circumstances and demands of this country."

"The Institute of Design, Chicago....tries to stimulate the student's energies in their totality...The new task, therefore, is to educate contemporary man as an "integrator", the new "designer" able to re-evaluate human needs warped by machine civilisation.

An education which is responsible for such a totality must be indivisible, integrating elements of art, science and technology."

The principal method in this system was based on the analysis through experiment of the properties of different materials, and the application of these characteristics to the solution of a problem in art or design. Students were encouraged to push these material to their limits, and were often set problems requiring materials to be used in a novel and creative way; bed springs made from wood, chairs to be made from cardboard etc.

The other great Bauhaus tradition carried on here was the availability of other media courses in the same institution. Experiments in photography, film-making, music and poetry were all encouraged as part of the educational process.

## 2.72 Colleges of Art in Britain

The only country in Europe to take up the Bauhaus concept after the war was England. English artists and art educationalists developed their version of the Bauhaus "Vorkurs" which they called a Basic Course, and which became the first year "Foundation" course common to all art schools in Britain. Coleman (1959), in his introduction to "The Developing Process":-

"As a concept of art education, basic design has its origins in the Bauhaus, particularly in the pedagogic work of Klee and Kandinsky and ... Johannes Itten. The basic design course aims at providing the student with information; information not restricted to the visible facts of nature but of the operation of formal and spatial relationships, materials, colour and so on ..."

Coleman credits Richard Hamilton with the introduction of these ideas at the Central School in London in the early fifties. Victor Pasmore also taught there at that time, and from 1955/7 he ran a series of basic design courses for secondary school art teachers at a Summer School in Scarborough, working with his wife Wendy and Harry Thubron from Sunderland College of Art. Hamilton and Pasmore were working by this time at King's College, Newcastle; while Thubron took his ideas to Leeds College of Art, assisted by Tom Hudson, Alan Davie and Terry Frost. These two institutions became flagships of the "avant-garde" of art education. M. de Sausmaurez (1964 p24) described Basic Design as:-

- 1 an attitude of mind, not a method:
- 2 primarily a form of inquiry, not a new art form:
- 3 not an end in itself but a means of awareness, and a fostering of inquisitiveness."

Analysis of the thinking behind the "Basic Course" is encouraged by the availability of the artists' ideas in print. Pasmore (1959):-

"The development of new foundations in art training, on a scientific basis, ... is a necessary step to following on the decline of the classical academies and the new developments in modern art and technique. ... something more is required than a ready-made repetitive course of abstract exercises ... A modern 'basic' course, therefore, should assume a relative outlook in which only the beginning is defined and not the end. Thus the student is asked to embark ... on a dynamic voyage of discovery ..."

Thubron (1959):-

"... whatever the emerging courses may be, they must of necessity combine an increased sense of search and experiment ...

It must become a living and vital organic unit that is in continual change."

"Exercises are the starting point of certain lessons, and therefore experiences. They allow the students to partake in a series of visual, and therefore emotive and imaginative experiences."

Hamilton (1959):-

"Rarely is a problem presented in terms which permit free expression or aesthetic decision. The student is prompted to think of his work as diagrams of thought processes - equipment which will enable him to derive further conclusions."

Forrest (1985 p152) in his appraisal of Thubron's work at Leeds reported:-

"Thubron brought into the college Indian dancers and musicians, outside lecturers on related arts, on physical structures, on philosophy and history. This was a general stimulation ... the students were not prepared for these activities nor were they followed up in any organised fashion.

He rejected the idea of a settled, immutable course: constant change and ever-shifting dynamics were essential.

It is impossible to recreate the originality and excitement of Thubron's teaching at that time."

There has been much criticism of the concept of the Basic Course, mostly based on the application of the course as some form of panacea, and the effects of the course when transposed into schools. Rushton and Wood (1978 p13), criticised the teaching of Thubron for being based on personal rather than social development; claiming that it shows; "Most of the implications of a Bauhaus (mis)-influenced cryptoscience of art education."

Field (1973 p 64) claimed that the failure of the basic course in schools was due largely to the inability of art teachers to transpose the exercises into non-abstract work; whilst

Sutton (1962 p 433):-

"... its (Basic Course) claims to use(fulness) ... rely more on the fervour of its followers than on any obvious educational merit."

Hannema (1970 p 64) blamed instructors for misappropriating exercises and projects, and developing courses without any "intellectual rigour":-

"... the experimental Vorkurs ... was isolated from its context, and blown up, grotesquely ... It amounts to a contradiction of all that Gropius stood for."

Whereas some evidence can be found to support these particular claims, the more general complaint, that the basic course was inappropriate and led students and teachers off in the wrong direction, is to miss the point of the course. It was an instrument, a means to a greater end, not an end in itself. Criticism on this level would seem to be like blaming Samuel Colt for Billy the Kid, Max Planck for Hiroshima, or Iron Age Man for Lizzie Borden. The Vorkurs and the Basic Course were designed so that the student could, through open-ended experiments, discover the formal characteristics of "art", try new materials and techniques, learn analysis and synthesis, and recognise their own personal response to the form and content of art; then move on.

What should also be remembered is the context in which the basic course was introduced. At that time the only qualification for artists outside of University or College of Education was the National Diploma in Design (NDD) which was rooted from the classical academy through the nineteenth century British Schools of Design. The NDD was introduced in 1946 and superseded a system which had operated since 1913. Under this earlier scheme students began full-time art studies at sixteen. After two years they were allowed to enter for the "Drawing Examination", with tests in:-

- Drawing from Life
- Drawing/Painting from Memory and Knowledge
- Anatomy
- Architecture
- Drawing from the Cast and Perspective.

Having completed this examination and a further two years work, the students were entered for one of four advanced exams:-

- Industrial design
- Illustration
- Painting
- Modelling

In 1946 the Drawing Examination was replaced by eight tests called the "Intermediate Examination in Art and Crafts". This examination included the five tests from the original plus:-

- Drawing the Figure in Costume
- Creative Design for Craft
- General Knowledge

The advanced examination was replaced by one qualification, the National Diploma in Design (NDD).

All these examinations were set and marked "centrally", and it was the problems associated with the transport, storage, and assessment of these vast quantities of work which led the National Advisory Committee on Art Examinations to recommend in 1957 radical change to the system, leading to more autonomy for the colleges of art. D E S circular 340 (14 July 1958):-

"... the time has come when all those schools which are judged capable of providing new courses ... should be given freedom to examine their own students subject to the external assessment appropriate to a national qualification."

This circular also proposed the establishment of a National Advisory Council on Art Education, and its first report, the Coldstream Report (1960) proposed a transformation of tertiary art education by terminating the NDD and replacing it with the "Diploma in Art and Design" (Dip AD). Courses were to be of three years' duration and studies were divided into four areas:-

- Fine Art (Painting or Sculpture)
- Three Dimensional Design
- Graphic Design
- Textiles and Fashion.

Ashwin (1975 p 93):-

"The Dip AD was to differ from the NDD in several important respects. The NDD had been a vocationally-orientated qualification ... the proposed Dip AD was to offer art and design subjects in a broad general context. The Dip AD was conceived as a "liberal education in art" of first degree standard ... for the most promising artists and designers, and not "a complete training in any highly specialised techniques of industry or commerce."

The first courses for this new qualification were started in 1963 with the first diplomas awarded in 1966. The minimum entry age was eighteen, and candidates were normally expected to have previously completed a "Pre-Diploma" course at one of the recognised centres. Coldstream (1960):-

"Each art school should be free to construct its own pre-Diploma courses without reference to any national body. The general aim of all these courses should be to train students in observation, analysis, creative work, and technical control through the study of line, form, colour and space relationships." DES Circular 340, para 3.

In 1965 the Council issued a further recommendation that the name of these courses be changed to "Foundation Courses"; better "to indicate the function they have in practice assumed". So ten years after the Pasmore/Hamilton/Thubron initiative, the English "Vorkurs" was given official status.

One of the main hypotheses of this chapter is that art reflects the contemporary social context, and art education reflects these trends/attitudes/opinions/values etc and introduces them to students in a controlled and questioning situation. This challenging, dialectic environment is at the same time the great strength and yet the weakness of post-1960s art education. It throws up stimulating new ideas and relationships, yet often throws out some potential babies with the bathwater.

It is at this point that as author I should declare an interest. I was a student at Newcastle under Pasmore and Hamilton, and followed Thubron on to the staff of Leeds College of Art/Polytechnic/Metropolitan University. My post-perceptions of the 1960s have distilled into simple memory: Pasmore and Hamilton were primarily artists, outstanding in their differing ways; but they did not communicate easily or well; though what they did say was usually important. Harry Thubron was undoubtedly the most charismatic, innovative British art teacher of this century. Staff at Leeds still talked in awe and admiration of his lessons ten years after he had left.

Leeds at this time had an international reputation, yet it discarded the system on which



that reputation was built, and became one of the pioneers of the seventies 'fine art revolution'. The analytical approach of the Bauhaus idea had fitted very well with artists who believed in abstract easel painting, but once this movement had lost its impetus, and the Emperor had put on his new clothes, teachers had lost their audience. The establishment was slow to learn the lessons of the 1968 Hornsey College riots, and to accept the current innovations in art, like Minimalism, Conceptualism, Mixed-Media, Environmental, and Performance Art. All these styles were the antithesis of academic or even abstract concepts of 'fine art'; yet they were the ideas which stimulated the most open and original students. Leeds was one of the first colleges to offer opportunities for this type of exploration, and was roundly criticised by some authors. Much of this criticism was couched in language previously directed at Constable, Turner, Courbet, Manet, Monet, Picasso, Duchamp, Kandinsky et al. Hannema ( p108):-

"One wonders about the maturity of staff members ... whose end of year project with students consisted of a room hung full of contraceptive devices."

Forrest (p156):-

"... (the Fine Art department) presents a picture of sloppy educational thinking, ... and an all-round incoherence about the aims and objectives of a higher education in art."

"Rejection of the need for training in the use of and sensitivity to formal characteristics of visual works of art has sometimes had disastrous results. In many cases it was replaced by requirements of pre-image verbal justification, conceptual defence, poetic literary idea, unique and idiosyncratic expression - these taking precedence over any purely aesthetic qualities the work might possess." (p147)

These last remarks could be paraphrased to describe the general world of "art" since the seventies; and this begs the question which has dominated art education for four hundred years, is the role of an art school to replicate the ideas of contemporary masters, or should they reinforce accepted dogma, and become "academies"? Indeed, are these two viewpoints mutually exclusive, or is there some middle road ? The background to the events and changes in the world of art were summarised by Livingstone (1979 p359):-

"... the proliferation of new movements at an ever accelerating pace as been one of the most marked characteristics of art since the early 1960s. The tendency for artists to react consciously against the tenets of their immediate predecessors has engendered an atmosphere conducive to experiments remote from the taste of the public."

He further offered an explanation of one of the main reasons for the change in attitude:-

"The effects of economic forces have been manifest not only in a grotesque parody of the built-in obsolescence of the consumer society ... but in the reaction of artists who sought to subvert the system altogether by abandoning the manufacture of saleable commodities."

This appears to be a loud echo of "Der Blaue Reiter" (Blue Rider) group (1911-14), who produced abstract work supporting Kandinsky's "... the nightmare of materialism oppresses the soul of modern man".

There are obviously other, more subtle, forces at work on the minds of artists, and a good example is given in Joseph Kosuth's seminal essay "Art after Philosophy" (1969). In this work he cited Duchamp's use of the "Ready-made" in 1914, as the single event which changed the focus of art from "appearance" to "conception", from the "form of language to what was being said". This attitude changed the emphasis in art from the purely visual "aesthetic" or "painterly" properties, to the ideas and concepts behind the work; which then required literary expression.

One unusual factor in the pluralist world of "Post Modern" art is that almost all of the new "movements" initiated since the 1960s still exist: styles have come and gone as fashion dictates, but most still have their exponents and supporters, and no one movement dominates the scene. However, there has been a great decline in the volume of abstract paintings of the type which had dominated art since 1910.

This decline in interest in Abstract Expressionism produced as a side effect, changes in attitude to the problems of art education. Perhaps the most influential art educationalist of this century in the primary and secondary sectors was the Austro-Hungarian Viktor Lowenfeld. Barkan (1962):-

"When Lowenfeld first published his theory about teaching art in 1947, his ideas

were very much in tune with the highly personal and introspective nature of the style of the day, Abstract Expressionism ... Artists during the late 1950s and early 1960s began to recognise the limitations of Abstract Expressionism, and in turn, theorists in art education began to recognise the limitations of Lowenfeld's notions."

## **2.8 Child Art Movement: Rousseau, Pestalozzi, Froebel, Cizek, Richardson**

Even today most art teachers would support the ideas that were the essence of Lowenfeld's teaching, that children's art demonstrates their mental processes and their level of development and maturity. Also, that it has intrinsic expressive value; and that children will respond positively to empathetic, specialised teaching, aimed at their level. Lowenfeld represents the last link in the "Child Art" chain; the culmination of a trend that began with Jean Jacques Rousseau.

Inspired by the English 'democratic' philosopher Locke (1632-1704), author of "Thoughts on Education", Rousseau developed a theory of education, summarised by Tomlinson (1966 p11) as:-

"Instruction should proceed by an appeal to the child's curiosity, by stimulating his intelligence rather than by imposing cut and dried notions upon it."

Most authors identify the work of Rousseau, through the publication of his book "Emile" in 1762, as the beginning of modern ideas in education, but Stewart and McCann (1967 p12) provide a body of evidence to show that there were innovators in British educational theory and practice before that date; citing in particular, William Gilpin and David Manson. They clarify their terminology and criteria, and offer a special definition of an "innovative" approach, claiming that such schools:-

- "- have to be markedly original in their approach to what is to be taught and how it is to be taught;
- in their recognition of the pupil as initiator and the teacher as guide rather than authoritarian;
- in their concern for the humane organisation of the school community to these ends."

Gilpin, Headmaster of Cheam School from 1752-77, also taught drawing, and his

biographer C.P. Barbier (1963 p319), offers a pupil's description of an art expedition:-

"I went into the town of Cheam this morning to draw some Houses or any thing that I liked, with some of my fellow Schoolboys. They tyed one of Mr Robt Sanxay's Horses up and d(rew) it but thay finding it hard to do all leaft of but one, and they drew a barn an a house. I drew Mr Sanxay's house and Mr Sorey Gilpin said it was very well done."

Stewart and McCann describe Manson as:-

"... the mercurial Irishman ... brewer, inventor and school-teacher ... one of the first to modify the normal school routine by combining lessons with play and amusement. The Play School was first opened in 1752 ... and ran for some forty years." (p21)

However, though ideas of this type were obviously in circulation before those of Rousseau, it was Rousseau who proved to be the most influential. His ideas on the nature and nurture of children fused with those of the English radical and scientific thinkers, and gave new directions to eighteenth century education.

Though this period has been described as a time of "Rousseaumania" there was still considerable opposition to his ideas. John Wesley described "Emile" as "... the most empty, silly, injudicious thing that a self-conceited infidel wrote". The vituperation that the 'infidel' received from the Church and the establishment was led by John Brown, the Vicar of Newcastle upon Tyne; his "Classical Christian" approach, summarised by Evans (1955, in Stewart 1967 p55), believed that:-

- " - the child is evil by nature;
- childhood is a preparation for adult life;
- education must consist of what will be useful to the child when he becomes a man;
- the value of the subjects taught lies not in their intrinsic interest but in the moral and intellectual training they give."

This was in direct contrast to the "progressive" viewpoint, exemplified by Rousseau, in Book 3 of "Emile":-

"Let us lay it down as an incontrovertible rule that the first impulses of nature are always right; there is no original sin in the human heart."

Rousseau's particular interest for this study, lies in his comments on art education, summarised by Sutton (1962 p43 ):-

"All children ... try to draw, and I would have Emile cultivate this art ... to give him exactness of eye and flexibility of hand, (and) clearness of sense of perception. I shall take good care not to provide him with a drawing master. Nature shall be his only teacher, and things his only models. I shall follow his example ... We shall get brushes and paints, we shall try to copy the colours of things and their whole appearance, not merely their shape...in all our daubings we shall be searching out the secrets of nature."

Sutton then goes on to declare the effect of "Emile" on contemporary art education:-

"Emile's art education had little immediate success as a model for English youth ... to go to the real world of experience for stimulus ... to declare unblushingly that 'We shall daub' - this was all ... near a hundred and fifty years ahead of comparable thought in England." p45.

Other Continental theories of education also had little impact on the British system until the work of Pestalozzi and his collaborator, Emanuel von Fellenberg (1771-1844).

Johann Heinrich Pestalozzi (1746-1827) was born in Switzerland to Italian parents. A disciple of Rousseau, his book "Gertrude Teaches Her Children" (1801) ranks with "Emile" as one of the most significant in the history of education. The book is a series of twelve 'letters to a friend' which develop Pestalozzi's main contribution to education, his invention of object lessons and his teaching method. He believed that to a child the world was "a sea of confused sense impressions, flowing into one another"; and that the mind worked these impressions into definite ideas, by the power of "Anschauung" (intuition, or psychic energy). If the subject-matter of instruction was broken down into its basic elements, and these presented in a logical sequence, then education could become a science based on the laws of thinking.

He included the teaching of art in this theory, proposing a series of exercises, summarised by Sutton (p48-51):-

"... by exercises in lines, angles and curves - a readiness in gaining sense impressions of all things is produced in children, as well as skill of hand, of which the effect will be to make everything that comes within the sphere of their observation, gradually clear and plain."

"But drawing ... making ideas clear, is essentially bound up with the measurement of forms.

Thus, in order to found the art of drawing, we must subordinate it to the art of measurement, and endeavour to organise as definite measuring forms, the divisions into angles and arcs that come out of the fundamental form of the square ...

These divisions of the square by straight lines produce certain forms for defining and measuring all angles, as well as the circle and all arcs.

I call the whole the ABC of Anschauung."

Pestalozzi added a revolutionary footnote: "The want of such a method of instruction about form, is ...THE defect in the structure of human knowledge."The defect in

Pestalozzi's system lay in his concept of art, which he developed in "The Method" 1828:-

"Angles, parallels and arcs comprise the whole art of drawing. Everything that can possibly be drawn is only a definite application of these primary forms....the aesthetic beauty of all forms can be evolved from the nature of these three primary forms." (p51)

He also took the opposite view to Rousseau and believed that adult concepts of art should be taught to children. One of the many British visitors to Pestalozzi's Institute at Yverdon, described an art lesson of 1814:-

"All the boys in that immense room were drawing figures, chairs, tables, and so on; all drawing by perspective. He (the old man) said he found that everybody could do it." (Sir J. Coleridge (1814) in Sutton p54).

Rousseau, Pestalozzi, and Fellenberg first brought the claims of a child-centred curriculum to the attention of the British, then the social and economic realities of nineteenth century industrialisation added impetus to the need for national development of education. Despite the heavy defeat in Parliament in 1850, of a bill to establish a national system of schools, pressure continued. The number of educational periodicals increased sharply, visits to schools became a popular hobby for local dignitaries, and in 1854 the RSA held the first Education Exhibition. One of the leading supporters of the movement was Britain's first woman sociologist, Harriet Martineau (1854 p37):-

"Although we have not yet got a system of national education, we are always talking about it, and we mean to have it, and no doubt shall have it some day."

In 1856, the Newcastle Commission was set up to survey the existing elementary school system, and in 1870 W. E. Forster introduced the Education Act which began to cover the country with new elementary schools for the working class. Is it cynical to point out that this was three years after the Franchise Act had added a million artisans to the electoral roll?

In spite of the dramatic internal influences on British education there was one Continental theorist whose reputation and influence was increased in the second half of the nineteenth century. Friedrich Froebel (1782 - 1852) published his "The Education of Man" in 1827, and he had a major impact on the teaching of art throughout Europe. He visited Pestalozzi in 1805, and his comments were reported by Sutton:-

"The teaching of drawing was very incomplete ... but ... drawing mathematical figures by means of which the comprehension of the forms of actual objects of everyday life might be facilitated, was much more to my mind." (p69)

Froebel was convinced of the educational power of "line" drawing:-

"The perception and representation of linear relations opens to the child... a new world.

Not only can he represent the outer world in reduced measure, and thus comprehend it more easily ... he can reproduce outwardly what lives in his mind. Give the child a bit of chalk or the like, and soon a new creation will stand before him and you ...

The faculty of drawing is, therefore, as much innate in the child, in man, as is the faculty of speech, and demands its development and cultivation as imperatively as the latter.

A universal and comprehensive plan of human education must, therefore, necessarily consider at an early period, singing, drawing, painting and modelling.

Its intention will not be to make each pupil an artist ... but to secure to each human being full and all-sided development, to enable him to see man in the universality and all-sided energy of his nature." (p62)

In reality this programme consisted of a series of 'adult' line-drawing exercises based on geometric shapes and networks, obsessed with horizontal and vertical lines and planes. For all the moral philosophical justification of his ideas, the lines of "full development" were laid down by Froebel. Even the 'experimental' painting exercises were merely the

colouring-in of outlines provided by the teacher. And the actual choice and use of colour followed strict dogmatic lines.

The formal exercises devised by Froebel were taken up by many teachers, as they fitted well with the nineteenth century attitudes to the supposed 'rules' of art and decoration.

Yet it was the philosophical basis of his teaching that had the long-term effect:-

"... to excite in the mind of the child a necessity for explanations, as well as to gratify his desire for creativeness, and for practical usefulness."(p79).

Shortly after Froebel's death several of his disciples visited England to teach and lecture.

The first kindergarten was opened in Hampstead in 1854, and Froebel Societies were formed throughout the country. Ebenezer Cooke (1837-1913), a devotee of Ruskin, became an enthusiastic Froebelian, and he associated with Thomas Ablett, (1848-1945), the founder of the Royal Drawing Society; joining forces to fight the intransigent "Science and Art Department" and their doctrine of "drawing at the service of technical design and decoration". Cooke was also probably the first to realise how prescriptive the Froebel system had become. The exercises were no longer aimed at stimulation of the inventive faculties of the child, but were now routine copying tests, evaluated by their accuracy. He began to criticise both Pestalozzi and Froebel on the grounds that their formulae were incomplete; natural objects could not be constructed from formal geometric shapes, claiming that:-

"The choice is between accuracy and interest, between technical skill and child nature ... The child's attention is aroused and sustained by interest. The nature of the child can no more be altered by us. We must study, sympathise and conquer by obeying it." (1885, in Field 1970 p53)

Ablett, originally Head of Art at Bradford Grammar School, was appointed in 1882 as Inspector of Drawing to the London Schools Board, and was described by Tomlinson (1966 p12) as:-

"... the first art teacher to recognise the importance of children's scribbles ... and had the courage to free the children of this country from the old copying method to the principle of self-expression."



Ablett was also the author of a most prophetic statement:-

"Soon will art teachers have to justify their existence to a cultured nation. If they cannot show that their work is based on principles which make an appeal to the intellect, it will surely stand condemned." (in Sutton p353)

John Dewey (1859 - 1952) as an educator was particularly concerned with the idea of "growth", in the development of children; and also that the teacher must act out some positive role, placing his ideas for educational activities in the context of society. Of particular interest to art educators was the Dewey concept that the "self-realisation of the individual became an end in itself, not a process". This gave pupils the freedom to work for their own interest, but produced the side-effect that some teachers lost the idea of positive action.

Dewey has exerted an immense influence on art education in this country, but few teachers have achieved what Dewey envisaged (1934 p 52):-

"A controlled situation, in which the teacher had an overall picture of what was happening and what might happen."

Early support in this country for Dewey came from the psychologist James Sully (1842-1923), author of "The Human Mind" (1892) and "Studies in Childhood" (1895), who believed that the child should be placed in "an aesthetic atmosphere and in companionship with nature".

The child art movement was given further impetus by the work of the Viennese educator, Franz Cizek (1865 - 1946), who founded his "Juvenile Art Class" in 1897. With his philosophy of "let the children grown, develop and mature", he suffered years of criticism and ridicule.

Cizek noticed that different children drew things in the same way and concluded that "it seemed that all children unconsciously followed eternal laws of form".

Our knowledge of Cizek's work comes mainly from those teachers who visited his school and wrote of their impressions/observations/conversations. The best known of these are

Wilson (1921), and Viola (1936), whose often idealised and sycophantic attitudes have led to a slightly distorted view of Cizek's aims. These are some of his themes as reported, many of them still applied today:-

"People should draw as they feel ...  
Get away from nature ...  
The teacher should avoid every form of compulsion ...  
Why correct children's work ...  
Child art is nothing but the natural development of the child's logic ...  
Even when the child scribbles he thinks and creates ...  
Don't do things which you remember, but things you invent ..."

Sutton however (p400), points out that the reality of Cizek's teaching, taken from the text of his own books, and the writings of other more objective visitors, shows a much more prescriptive attitude.

"Rub out your figures and make bigger ones ...  
Those who make small drawings won't get an easel ...  
You must all begin with the head at the top of the paper.  
One mustn't draw two things one on top of the other ...  
You are dull. Those before you were much brighter.  
You are really slow.  
An artist is free to create his own laws, but a teacher must give his pupils strictly correct ideas, if they are to get a solid basis for their work."

Exhibitions of the work of his pupils were held in London from 1908 to 1935, and his reputation and influence became immense, giving at that time added impetus to the changing outlook of this country. Some examples of the work were reproduced and sold by the thousand. The impressions of one art teacher of the (1919) Exhibition, reported by Littlejohn in "Art in Schools" convey both the impact of the pictures, for they were 'pictures' not exercises: and also the great misconception about Cizek's methods.

"... the effect was staggering ... And when the methods of the teacher became known, amazement gave way to incredulity. For the children were not in the usual sense of the work, taught at all!"

Field attributes the development of the child art movement in Britain largely to the work of Marion Richardson ( 1892-1946) who proclaimed that "ALL children have creative

abilities ..." and in the words of Field (1970 p 54), "She developed brilliant methods to put her ideas into practice."

The spread of the Richardson ideas and methods was explained by her in her book published posthumously in 1948, and reported by Tomlinson (1966 p16):-

"The times were ripe, the teachers' minds were ready, chiefly because of the growing respect for the individuality of the child.

In art this respect is a necessity, for unless a child is expressing his own visualisation he is expressing nothing at all."

The self-expression movement was received with great enthusiasm in Britain, so much so that by 1935 it had to be explained as "... not so much allowing the children to do what they like, as seeing that they like what they do."

## **2.9 Post War Art Education: Herbert Read**

The major influential voice on art education in post-war Britain was Herbert Read, who formulated a theory for art as the foundation of all education. Published in 1943 as "Education through Art", this book was Ruskian in essence, an amalgam of Read's theories of the "meaning" of art, tied in with Jungian psychology and the child art movement.

Read's thesis was again one of those which was misunderstood, and perhaps too revolutionary ever to have any actual influence. Yet it contained all the elements which were the essence of twentieth century art, individual self-expression within a wider social context, and so had the support of most art teachers, who believed he meant literally that 'art' should be the centre of the curriculum.

What he actually believed was that education should be concerned with the qualitative aspects of life, and this could only be achieved through the arts, as science related subjects were primarily concerned with quantitative ideas.

His main thesis was stated quite clearly early in the book, but was then lost in the mass

of peripheral support. Read belonged quite openly to the Plato/Schiller stable.

"I have no other ambition than to translate his (Plato's) view of the function of art in education into terms which are directly applicable to our present needs and conditions." (p61)

After acknowledging that Schiller alone has supported Plato's idea, Read produced the statement which by its very simplicity caused the confusion.

"The thesis is: that art should be the basis of education."

Read believed that Plato's idea was misunderstood because of society's lack of agreement on definitions of the nature and purpose of both 'art' and 'education'. So he provided them. Within a liberal democracy, the only purpose of education was to develop the uniqueness and the social consciousness of the individual; he cited Rousseau, Pestalozzi, and Froebel as supporters; and Dewey and Edmond Holmes as the modern formulators of this theory. However, he was quick to qualify his definition of art:-

"It must be understood from the beginning that what I have in mind is not merely 'art education' as such ... The theory to be put forward embraces all modes of self-expression ... and forms an integral approach to reality which should be called AESTHETIC education - the education of those senses upon which consciousness ... intelligence and judgement ... are based." (1943 p17)

This is a frighteningly complex and contentious concept; and then after warning his reader of the 'disastrous' arbitrary systems of thought which 'seek to impose' an intellectual pattern on the world; he dives off the pier of objectivity into the murky waters of neo-Viennese psychiatry, citing Freud, Kretschmer, Pavlov, Jung and Koehler as supporters. Whereas Read was undoubtedly right to try and frame a theory of art education within the wider social and intellectual context, his efforts emphasise the dangers awaiting writers who cross over into new domains.

## **2.91 Viktor Lowenfeld**

Is it merely a coincidence that the other major international figure in art education in the mid-twentieth century Viktor Lowenfeld (1903-60), also drew the root of his ideas from

Vienna?

Peter Smith (1989 p 104) commented that "Lowenfeld is still a name of power in American art education ... his concepts go marching on". Read and Lowenfeld share a great many ideas, and probably met during Lowenfeld's stay in London (1938), where he initially fled from Nazi persecution before moving to the USA.

All Lowenfeld's teaching was based on psychology, and though he hinted at a personal relationship in Vienna, there are few actual references to Freud in his writing. In fact the psychological basis of Lowenfeld's art educational theory was in Gestalt psychology not psychoanalysis; and his principal theory (also Read's) the "visual/haptic" split, was the work of another Viennese, Alois Riegl. Lowenfeld's most influential book, "Creative and Mental Growth", was first published in 1947, then updated and reprinted for over twenty years. His central thesis as expressed in the preface was:-

"... the child's general growth is tied up with his creative development ... Creative expression is as differentiated as are individuals ... the child's creative expression ... can only be understood ... if the general causal interdependence between creation and growth is understood."

Barkan qv, attributed criticism of Lowenfeld to the demise of the introspective Abstract Expressionist movement, but more serious questions have subsequently been raised about the concept of both 'creative development' and 'growth'; and Lowenfeld himself never established any causal relationship between these ideas, even in his own terms. However, he was in the words of his collaborator, Lambert Brittain (1964 p 62), a dynamic, exciting, stimulating, inspirational, awe-inspiring teacher; and he was certainly the most influential post-war figure in art education. He saw the problems of contemporary education in global philosophical terms. In his own words:-

"Serious questions can be raised about how much we have been able to educate beyond the making and consuming of objects. The real values of a democracy lie ... in the individual."

"The values that are meaningful in an art program are those which are basic to ... a new philosophy ... (for) our educational system." ( p2)

His educational theory was the culmination of the Child-centred approach:-

"For our children art should become their friend to whom they turn with their joys and sorrows, their fears and frustrations, whenever words become inadequate. (p18)

"The term 'self-expression' has been misunderstood so often. What matters ... is the mode of expression, not the content; not the what but the how.

(In) the process of drawing ... (the child) has given us a part of himself: how he thinks, how he feels, and how he sees." ( p 25)

He concluded with a statement that "is the very foundation of our philosophy", "... that every child is potentially gifted". There are echoes here of the later work of Reuven Feuerstein. His book is punctuated with prescriptive practical instructions to teachers :-

"The teacher must	subordinate himself and his desires to the needs of the child.
must	make himself acquainted with the physical and psychological needs of the child.
should	know that every child must develop his own technique and that every "help" from the teacher ... in showing "correct" technique ... will only restrict the child's individual approach.
must	have the psychological insight necessary for properly motivating the child.
must	support self-initiated activity.
must	provide the stimulation for individual thinking.
must	be warm and friendly. (p29-39)

His basic philosophy of art education was to differentiate it from fine art:-

"... the emphasis in art education is on the effect that the creative processes have on individuals, it is the aesthetic value of the end product that is of importance in the fine arts."

"The opportunity for the child to create constantly ... is the best preparation for future creative action."

"The greater the opportunity to develop an increased (perceptual) sensitivity ... the greater will be the opportunity for learning."

However, Lowenfeld was not always consistent in the components of his theories, describing "Art as a means of understanding growth", then substituted 'evaluating' for 'understanding' in the next sentence; having earlier claimed that:-

"Grading of creative products, however it is done, is harmful to the child because it turns his attention from the creative process to the final product." (p58)

He then listed the different components of "growth" and analysed their significance (p60-70):- "In order to understand and evaluate growth better ...:-

**"Emotional growth:**

The emotional release given by a creative work ... is usually in direct relation to the extent and intensity with which he (the child) identifies with his work.

**Intellectual growth:**

... is usually seen in the child's growing awareness of himself and his environment.

**Physical growth:**

... is seen in his capacity for visual and motor coordination ...

**Perceptual growth:**

... can be seen in the child's increasing awareness and use of kinaesthetic experiences (body movements) ...

... in the growing response to visual stimuli ... intricate analysis of visual observation.

**Social growth:**

... the child learns to assume responsibility for the things he is doing ... (by) identifying with his own experiences.

**Aesthetic growth:** (as defined by Herbert Read 1943) ... an increasing sensitivity to the total integration of all experiences concerning thinking, feeling, and perceiving ... seen in the harmonious organisation ... of spaces, lines, textures and colours."

He concluded with a definition of "**Creative growth**" :-

" the power to use freely and independently and to apply the six aforementioned components of growth for an integrated effort."

Lowenfeld distinguished six distinct stages of growth in school children as illustrated by the "style" of their art"-

- |   |                                   |               |
|---|-----------------------------------|---------------|
| 1 | Scribbling Stage.....             | 2 - 4 years   |
| 2 | Preschematic Stage .....          | 4 - 7 years   |
| 3 | Schematic Stage.....              | 7 - 9 years   |
| 4 | Dawning Realism .....             | 9 - 11 years  |
| 5 | Pseudo-Naturalistic Stage .....   | 11 - 13 years |
| 6 | Crisis of Adolescence Stage ..... | 13 - 16 years |

and required that teaching should be appropriate at each stage. His definition of teaching seems to be an amalgam of "stimulation, motivation, psychological insight, and the creation of an environment for individual self-expression."

Lowenfeld's significance for this study lies in the fact that he was the first art teacher to openly advocate "creativity" as the basis of art education:-

"The development of artistic ability and the development of creative thinking should be thought of as one and the same."

"Because perceiving, thinking, and feeling are equally stressed in any creative process, art may well provide the necessary balance for the child's intellect and his emotions." (p 87)

Having published his first book "The Nature of Creative Activity" in 1938, he quickly absorbed all the new ideas of the 1950s. His adopted definition of creativity was entirely J. P. Guilford's, and all Lowenfeld's components of creativity are the Guilford factors of fluency, flexibility, sensitivity, imagination, originality, and the ability to abstract, redefine and synthesise", which are listed under the heading of "divergent thinking".

Lowenfeld, in terms of art educational thinking, is considered an historical figure; but in terms of art education actuality he is very much alive! As there are still many Froebelian and Montessori Kindergarten in operation, there are still many thousands of art teachers still preaching Lowenfeld theories. There have been a number of studies appraising the work of Lowenfeld (Smith 1989, Barkan 1982, Parks 1989 et al), with most of the more recent being quite critical, largely due to the changing political climate for art and art education.

The overwhelming success of the Lowenfeld method, even though his interpretation of the underpinning psychology theory was fundamentally flawed, was largely due to the basic "hands off" approach, which if it did not always do much good, at least did the children no harm. It also placed "child art" firmly in an expressive context, and subject to evaluation on its own terms.



## **2.92 The Discipline-Based Art Education Movement (DBAE)**

Formal opposition to the Lowenfeld approach to art education, that of child-centred self-expression, with the teacher as facilitator, began in the USA, with the publication of Jerome Bruner's book "The Process of Education" (1960). This book was essentially a report of a 1959 conference on reforms in mathematics and science education, and it introduced into education the term "structure of the discipline", referring to those structures of knowledge which facilitate learning. Efland (1988 p 262), described how art educators in the USA responded by asserting:-

"... that art was a discipline with a structure of its own and that curriculum reform in art education should begin with these characteristic structures."

The political situation in the USA at that time was a close analogy for the current situation in Britain, illustrated by Rickover (1957 p 346):-

"... now that people have awakened to the need for reform, I doubt whether reams of propaganda ... will again fool the American people into believing that education can safely be left to the professional educators."

As "disciplines" became the focus of curriculum reform, an hierarchy was formed which elevated some studies to the status of disciplines, and relegated others to be mere subjects. In the early 1960s discipline based studies became the universal approach to curriculum reform, and it spread to include the arts. In 1963 the Educational Research and Design Panel of J. F. Kennedy's Science Advisory Committee recommended that "... curriculum reform, as it had developed in science education, could be applied to education in the arts". The primary voice in the movement to treat the visual arts as a discipline was Manuel Barkan, who building on the ideas of Bruner and Feldman, confessed to trying "to make sense out of art curriculum problems". he argued that the disciplines of art were of a different order to those of science, and that structure in art was based upon the questions artists ask about "ultimate meaning"; and that this should be the basis of the curriculum.

"The professional scholars in art - the artists, the critics, the historians - would be the models for enquiry, because the kind of human meaning questions they ask about art and life, and their particular ways of conceiving and acting on these questions are the kinds of questions and ways of acting that art instruction would be seeking to teach students to ask and act upon." (1966 p 246)

In order to provide a model or artistic structure equivalent to that of science, Barkan adopted Ecker's (1963) notion of the artistic process as "qualitative problem solving", and claimed that art production, art criticism, and art history were all "modes of inquiry", and were of equal importance. These three concepts became the Holy Trinity of the discipline based art curriculum. To this trinity was later added "aesthetics", and these four themes became the core of Discipline Based Art Education, DBAE.

Greer (1984 p212 ) gave a concise description of the basis of DBAE:-

- "1 DBAE consists of integrated instruction in Four areas (qv)
- 2 DBAE instruction is sequenced from simple to complex, with professional behaviour as typical outcome.
- 3 DBAE needs a written curriculum, and instruction is systematic across grade (age) levels."

In 1985 the Getty Center for Education in the Arts, which had been funding research into art as a discipline, published the report of its findings as "Beyond Creating: The Place for Art in America's Schools", which outlined the four-part format of DBAE. This movement gathered a great deal of support, including Elliot Eisner and Ralph A. Smith; and it succeeded in breaking the anti-intellectual preoccupation of art teachers with child art as purely self-expression. Cowan and Clover (1991 p39) described a number of successful DBAE lessons and claimed:-

"... the full impact of on the liberation of children's imagination and focus of attention has to be observed to be fully appreciated ... children from all levels sustain a keen interest, enthusiasm, and creative response. DBAE ... can be as challenging as its participants."

"It seems that our traditional art introduction has served a similar purpose to our athletic instruction, that is to develop the skills of the gifted ... while ignoring the masses of students who might have made a contribution ... if they had been instructed in accessible methods."

However, there was considerable opposition to the very idea of an imposed curriculum in art education, forty years of "self-expression" proved very resistant to the enforcement of change. In the words of Efland (1988 p 262):-

"For a while it seemed that with the increase in accountability, the quality of education actually declined."

The root of Efland's concern lay in the apparent aim of DBAE, to directly substitute learning ABOUT art for learning THROUGH art:-

"The Getty Center 1985 publication ... suggests that their view of knowledge favours the onlooker mode of learning over the participatory mode, with art becoming an object of learning rather than a quality of experience."

"Equal representation of each discipline (of the four) is an arithmetic solution, not one guided by an understanding of how these might be joined together to secure meaning."

Other authors (including Alexander 1985) described DBAE as being primarily "prescriptive", with "outcomes prespecified, accountability stressed, and standardised testing included on the rationale that what will be tested will be taught".

Opposition to specific aspects of DBAE has come from teachers (in Lanier 1985), who pointed out that they already teach a DBAE curriculum; and also from educationalists who questioned the assumption that content in art is a simple matter of consensus.

Efland (1984 p209):-

"Barkan greatly underestimated the difficulties entailed in getting scholars in the arts and humanities to agree ..."

McFee (1984 p280), commenting on the Getty Center proposals:

"We need to know whose traditions in art history and in art curriculum are being selected ... and why. What are the parameters of art being taught? Are students being prepared to be discriminating in the popular arts, mass media, and the built environment, and if not why not?"

Bullough and Goldstein (1984 p143) argued that "Teacher-proof Curricula"

"... are unduly simplistic and trivialise the content of art ... art education is involved in a dangerous trade-off that may give art legitimacy but will in the process eviscerate what makes art study valuable."

Another author who challenged the omnipotence of DBAE was Karen Hamblen (1987 p68) who discussed the issues of DBAE within four general categories:-

- 1 Conceptual Structure: - how to establish a consensus on content?  
- which artists should become role models?  
- is it possible to simplify aesthetics to the level of the elementary school?
- 2 Curriculum Selections: - emphasis is on the integrity of the content presented to the student rather than individual learning differences.  
- the western world-view dominated DBAE.
- 3 Research Foundations: - DBAE adopted an academic tradition, which excluded alternative research studies.  
- evaluation through standardised testing.  
- low cognitive levels will constitute much of the art curriculum.
- 4 Organisational Support: - DBAE appears to be affiliated to the Getty Foundation, and has been presented as a more or less complete program.

She concluded that:-

"The language of DBAE is one of a no-frills, no-nonsense program that leaves little doubt that budgeted money will be well spent and that there will be no hedging on what needs to be done and what will be accomplished."

"Research on teaching art ... needs to be funded and conducted so that it does not prescribe a specific solution. At a time in our society when there is a proliferation of knowledge and life-styles, no one conceptual framework will enable students to cope with rapid change."

"Discipline-based art education, as currently presented in the literature, should be considered one among many possible approaches to treating art as a discipline." (p76)

In 1987 the American "Journal of Aesthetic Education" focussed two editions on the issue of DBAE. Elliot Eisner provided the major article setting out the case for DBAE. He first viewed art education in the context of its place in general education, then the status of art in schools, then human development and artistic learning. In a later edition of Art Education (Nov 1988 p7-13) he was given the opportunity to answer general criticisms of DBAE.

Beginning by acknowledging the importance of the "heated debate" on such an important topic, he scorned most opposition as being "cathartic, illogical, or obscure". He concentrated his attack on the poor quality of their arguments, preferring to score apparent intellectual points, and disregarding the obvious volume and strength of "feeling". He then spent three pages answering Karen Hamblen's points which were less critical of DBAE as well as being in less emotive language; concluding his article with the plea that most of those who oppose DBAE have simply misunderstood its aims:-

"DBAE is a concept, an approach to art education. It may not be right for everyone.

Those who are guided by other lights should follow them.

... some of DBAE's critics worry and claim that the sky is falling. Rather than hand-wringing and prophesying gloom and doom, art education would be better served if the energy devoted to the criticism of DBAE was directed toward making a better mousetrap." (1988 p13)

Jeffers (1990 p17) produced a concise comparison of the Lowenfeld/DBAE positions to explain the current art education dispute in America:-

"... the field of art education appears to have encountered a curriculum crossroads ... the Lowenfeld view represents a view of art education in the past and DBAE represents one aspiring view of art education in the future."

She used a system of metaphors to explain the various positions:-

"... the growth metaphor sees the child as a growing plant, the teacher as a gardener, the school as garden.

... the medical metaphor sees the student as patient, the teacher as therapist, and school as clinic.

Art education is seen here as therapy, with psychology as its method of treatment." (p18)

Jeffers used these metaphors as a description of Lowenfeld's approach; and another metaphor, "moulding" as devised by Scheffler, as applying to the curriculum of DBAE:-

"The child is seen as the clay, the teacher as sculptor. The teacher imposed a fixed mould upon the clay, shaping it to the specifications of the mould.

The final shape of the clay is entirely dependent upon the choice of a given mould." (p18)

Apple (1983 p143) adds a further dimension to the mouldings metaphor by pointing out that in a fixed curriculum, the teacher is also being moulded, an aspect supported by the perceptive comment of Bowers (1990 p66):-

"A curriculum permits access to a world shaped by the choices of its designers."

Jeffers concludes by revealing that both Lowenfeld and DBAE methods "diminish the teacher's role" and reduce the teacher to a "manager"; and also "deprive teachers and students of a richness and fullness in their interactions". Then she follows this with the idea that both approaches also isolate the child as a "non-adult". Jeffers ultimately believes that as we have not actually changed our view of the child, the teacher's role and the relationship between them, we may not be at the Lowenfeld/DBAE crossroads, but merely travelling parallel routes.

The situation was also discussed at some length by Topping (1990 p20) who called it a crisis of priorities, and asked four fundamental questions:-

- 1 What should we teach in art?
- 2 Who teaches art?
- 3 How do we prepare those who teach art?
- 4 How do we assess art education?

He concluded with a clarion call to arms:-

"At a time when conservative forces are threatening the very existence of creative self-expression in our nation, we have no choice but to clearly define and espouse our priorities."(p24)

The philosophical debate between the "Child-centred" and "DBAE" schools of thought, centres round the qualities of "Essentialism" as being a suitable system for art education. There are four basic characteristics of the Essentialist ideal, exemplified by the "Back to Basics" approach:-

- 1 Learning involved discipline (and often unwilling application)
- 2 Emphasis on accountability
- 3 Teacher as an authority figure
- 4 Structuring lessons to assimilate prescribed subject matter.

There are strong echoes here of the eighteenth century "Classic Christian" approach to education. Eisner (1987 p132) summarised the Progressive v Essentialist debate:-

"In one view, the starting point for educational decision making is the child, his needs, his interests, his unique development.

The other view begins with the subject matter to be learned, its values, its structure, its unique features."

It is unfortunate that these two viewpoints have polarised opinion, because any effective educational system must include both aspects. Finding any acceptable middle ground will not be easy; and as neither system will accept the imposition of the other, perhaps we should start in those areas where there is some agreement. Howard Gardner (1989 p71) claims that there already exists a general consensus about the need to move art education away from a purely productive base, to include:-

"... some discussion and analysis of art works themselves and some appreciation of their cultural contexts."

Gardner and his colleagues at Harvard Graduate School have offered a "new" cognitive approach to curriculum and assessment in the arts which they called ARTS PROPEL; an acronym for "Production, Perception, Reflection, and Learning".

"We believe that students need to be introduced to the ways of thinking exhibited by individuals involved in the arts; by practicing artists and by those who analyse, criticise and investigate the cultural contexts of art objects." (1989 p71-83)

The programme that ARTS PROPEL devised for the visual arts, defined the central competences of this art form, which included sensitivity to style, appreciation of compositional patterns, and the ability to create a work which satisfied certain constraints. For each competence, a set of exercises called a "Domain Project" was generated. Gardner described the "Compositional Domain", designed to help students, aged 10 to 16 years, notice how inter-relationships of shapes affect composition:-

Session 1 "... students are given a set of ten odd black geometric shapes. They are asked simply to drop those shapes on a piece of white paper. Then ... students are asked to put together a set of shapes which they find pleasing.

They are then asked to reflect on the differences between the "random" and "deliberate" work.

Session 2 "The teacher introduces a number of artistic works of different styles ... Students are asked to describe the differences ... and develop a vocabulary of ... harmony, cohesion, repetition, dominant forces, radial patterns, surprise, or tension."

Session 3 "Students report on the "compositions" they have observed in their own environment and discuss them. Now they are asked to make a final work, based on the deliberate composition of session 1, with revisions if they feel it necessary."  
"... the teacher also has an assessment sheet. There the teacher can assess the kinds of composition attempted or achieved ... (and) success in discovering interesting compositions in the environment, or the ability to connect own compositions with those of well-known artists."

The aim in ARTS PROPEL was to create an ensemble of Domain Projects for each art form, which would encompass most of the important concepts. In addition to these exercises, the students were required to keep a "work in progress" portfolio, containing all their sketches, drafts, critiques, ideas and any visual source material they have collected. These portfolios are systematically evaluated. Gardner also reinforces the idea that it is most important to look first at the natural development of the child, before planning any practical interventions:-

"... we believe that it is important to establish the psychological facts and to develop one's educational philosophy before one attempts to influence practice ..."

Though there are those who might argue that "psychological facts" is an oxymoron, and that every teacher has an "educational philosophy" even if they have never externalized it. Vincent Lanier (1987) was another writer who offered a practical alternative to DBAE; he called it the Aesthetic Response Theory, A R T; which replaced the elitist aspects of DBAE with a more pragmatic world-view. Gone is the predetermined curriculum, replaced by one designed by the teacher to meet the needs of one particular class. Aesthetic scanning is no longer seen as the key to unlocking the meaning of a work of



art: children study the work in the context in which it was formed. The number and type of works to be studied would be increased; beginning with work that is familiar to the learners and then expanding out into new areas Lanier believes that the pupils should "study" art, but not using the methods of scholarly enquiry as practiced by critics and aesthetes.

David Holt (1990) sees the dispute between DBAE and its critics as part of a larger philosophical issue, "the critique of high-modernism by post-modernists". Paraphrasing Burgin (1986), he notes that:-

"... prior to 1950 "abstract" modern art was considered subversive because it offended the philistinism of conservative politicians, but gradually it became acceptable, and a symbol of freedom of expression under the capitalist system." (p27)

Post-Modernism was a reaction to the perception that the modern movement had become "Formal"; that it was restrictive, elitist, conservative, sexist and out-dated. Accused of being self-indulgent, narcissistic, and uncommitted, the Post-Modern movement was an expression of discontent with the status quo and has become the embodiment of the "post-cultural" age.

Holt claims that the current diversity of the art world reflects a "pluralist" contemporary society with a multitude of attitudes and issues, and without a dominant single philosophy, and within that context:-

"This diversity should be represented in the classroom by a myriad of opinions, methods and approaches to art education, if that education is to be relevant to life outside the classroom.

"The potential of a conservative and powerful institution to inundate the schools with its questionable premise (essentialist and monolithic) is of real concern."

This issue can be seen as a conflict between:-

Liberal	v	Conservative
Progressive	v	Essentialist
Romantic	v	Classicist

but whatever labels are chosen to clothe the contestants, it is ultimately a philosophical issue, a question of attitude, an act of faith. It is also an international issue, for although these issues have been focussed in the USA, back-to-basics Essentialism has arrived in Britain, which is much more vulnerable to national centralised control. A succession of government Education Ministers have preached "greater accountability", and since the 1988 Education Reform Act, the National Curriculum for schools is now a reality.

### **2.93 The National Curriculum (NC)**

The aims of the 1988 Act (in DES Proposal 3.8) are to provide a balanced and broadly-based Curriculum which:-

- "a promotes the spiritual, moral, cultural, mental and physical development of the pupils ... and
- b prepares such pupils for the opportunities, responsibilities and experiences of adult life."

The support literature for the NC proclaimed that:-

"The National Curriculum:-

- defines what pupils will be taught, and will raise standards.
- will give them (pupils) the knowledge, skills and creativity they, and the country, will need in the twenty first century."

The NC has three compulsory Core subjects, English, Maths and Science; and a further eight Foundation subjects of which Art is one, compulsory up to the age of 14 years, then optional. Assessment is through three Attainment Targets (ATs), each with ten levels of ability; which are assessed at four age levels, called Key Stages (KS).

KS 1 4-7 yrs  
KS 2 7-11 yrs  
KS 3 11-14 yrs  
KS 4 14-16 yrs

The place of art in the NC has been the subject of much debate over the last few years, and the Art Working Group, under Lord Renfrew has taken representations from fifty

three organisations. The twelve members of this working party included two art critics, two head teachers, two professors, one adviser, one lecturer, one museum curator, one industrialist, one artist and one art teacher. It presented its interim report in December 1990, and recommended three main attainment targets:-

AT 1 Understanding

AT 2 Making

AT 3 Investigating

These were later reduced to two:-

AT 1 Investigating and Making

AT 2 Knowledge and Understanding

The response of education minister Kenneth Clarke to this initial report was to ask for more flexible and less prescriptive guidelines, and to emphasise the importance of creativity. He also suggested that art would only be optional for 14-16 year-olds, and that it could be merged with music or drama to simplify the NC. The final report on KS1 to KS3 was published by the DES in August 1991, to be implemented in autumn 1992. The proposals for the optional KS4 were deferred for further consultations.

The aims of the National Curriculum view art as:-

"... developing the powers of communication and self-expression in visual and tactile media, and in developing intuitive, analytical and synthesizing design skills through practice."

"... the inclusion of art ... will encourage informed enjoyment of the subject and emphasise the place of visual literacy as one of the core skills appropriate to a world where the image is as powerful an instrument of communication as the written word."

Specific aims are listed (in 4.1) as the development of pupils':-

- understanding of art as a form of visual communication;
- creative and technical skills for realisation of ideas;
- aesthetic sensibilities;
- observation of their environment;
- communication of ideas about art;
- critical and imaginative response to art and culture.

Several of these aims and many of the recommendations of the Art NC bear a striking resemblance to the declarations of DBAE:-

- 3.4 "... traditional preoccupations have inhibited the development of a rich and rewarding art curriculum ...  
... accompanied by an uncritical reliance on pupils possessing instinctive powers of self-expression."
- 3.5 "... while many divergent opinions exist about the role of art education in schools, there is overwhelming support for our approach."

Though others emphasise the individual child:-

- 3.6 "(Art's) particular contribution is concerned with:  
developing imagination and creativity ...  
... the expression of ideas and feelings; ...  
... the intuitive as well as the logical ..."  
"the importance of learning through, as well as in, art."

It is clear that the NC is taking on board the idea that art is a "discipline" and that these aspects should be taught. However, one of the key comments with regard to the British attitude was contained in the covering letter from the chairman:-

"The programmes of study as we have designed them are flexible. They provide an overall framework.  
We are anxious to emphasise the active role of the teacher in deciding how to teach and in determining the detailed syllabus ..."

This might be called a typical British compromise, HM Government thinks it gets central political control of the content of education, while at the same time the teacher keeps his apparent autonomy. Everyone gets what he wants, so everyone is happy. So what has changed? Very little in reality, possibly because art education in Britain was already moving in the direction of more literary analysis.

One of the central themes of this study is the hypothesis that ideas percolate down from "the world or art" through the art colleges back into schools; and art has for some years been acquiring a literary base. Historically, written support for art has been retrospective, ie Vasari, Wincklemann, Ruskin et al; but recently the early twentieth century trend for

"manifestos" has expanded to such an extent that no artist dare submit work for show without encyclopaedic support for his theories. Even the diploma shows of young students apparently need underpinning with philosophical support. Also, a growing part of the Fine Art course is written coursework. Written analysis, explanation, support, justification, or just theorising, is now normal procedure in the art world; and in the market place this is "accountability". Within education and the NC in particular, the role of this accountability is taken by assessment and testing. Though the exact form of this testing is not very specific.

- 8.3                "... assessment is an essential element in the creative process.  
Pupils involved in art ... are constantly assessing ...  
Teachers can observe pupils' growing ability to judge their own  
work and make use of these judgements in their own assessments."

Are the teachers supposed to base their assessments on the ability of the pupils to assess themselves?

The NC proposed "Criterion Referenced" testing; DES 8.1 proposes to set out "agreed criteria for assessment", for both art teaching and learning. Unfortunately, these criteria are in practice neither 'agreed' nor 'criteria'.

- 8.4                "Pupils' achievements are assessed against given criteria ...  
... which may be obtained from our recommendations for the  
attainment targets ..."

So the criteria are not given, but implied.

Proposal 8.5 lists the essential purposes of assessment:-

- to enable pupils to understand their progress ...
- to help teachers see pupils' progress ...
- to help teachers evaluate teaching ...
- to help teachers modify the curriculum ...
- to communicate pupil progress to others ...

The DES document also claims that assessment can also be either formative, to help establish attainable targets and achievements; or summative, to provide evidence of

achievement. However, the ultimate abdication of responsibility, the admission of the failure of an imposed centralised system of evaluation, is contained in 8.7 Methods of Assessment.

"NC testing in art education will be on the basis of TEACHERS' OWN ASSESSMENT."

The issue is further compounded by 8.10:-

"When assessing achievements in art, it is important to balance the relationship between the quality of an end product and the process of its making."

All this is good news for the classroom teachers who wanted to retain their independence, though not such good news for the conformist teachers who want to follow "neat rules of art". So despite a mountain of paper, "... dozens of ring-bound folders, and later booklets replacing earlier booklets" (Wragg 1993 "Teaching Today" p10), and a veritable "ether" of rhetoric, it looks as if the NC will have little practical influence on the teaching of art in British schools. Simply because it acknowledges the apparent quality of existing work, and reinforces the basic philosophy developed for the 16+ GCSE examination.

Unfortunately, this existing system is a mish-mash of pre-war dogma and so it fits neatly into a reactionary structure like the NC. At the bottom end, the primary schools still follow the Richardson / Read / Lowenfeld line; whilst at the top end, the 1960s experiments of CSE, which liberated art from the strictures of the nineteenth century dogma of accurate drawing in the 'O' level, have been abandoned and the subject returned to safer ground. This safe ground is the received wisdom of the accepted "values" and "subjects" of art: ie the observation and recording of nature in a personal style.

Whether this is a good thing or not is a matter of opinion, but there is little doubt that as the adult world of art drifts without any apparent cohesive direction, school art in Britain will retreat; as it has in the USA, into pseudo-aesthetic theory.

## 2. 94 The Present Situation

What art education really needs is either a reaffirmation or a redefinition of its true role, or a new paradigm for the twenty first century. Ashwin (1975 p63):-

"During the nineteenth century art education for children was dominated by principles and practices, originally devised for post-school education."

Franz Cizek turned this round by claiming that "... we are not making artists", which ultimately became "... child art is self expression"; a position now challenged by the DBAE movement which claims art is a fixed subject to be learned.

At a time when art has moved beyond the confines of the easel, how valid is an education system which restricts thought and expression to these limits? Both artists and art educationalists have, in the past, been quick to respond to new ideas in science and psychology; yet at this moment in time they (and most others) are dazzled by the volume and complexity of current theories. It is a pity that there are no neat simplistic banners to wave. As the galleon of classical science floundered on the rocks of relativity and quantum mechanics, so the fixed developmental stages of Piaget and Lowenfeld are challenged by the ideas of Chomsky, Wittgenstein, et al, and our knowledge of the cognitive processes of the mind is further confused by conflicting theories of Neuroscience and Artificial Intelligence. Where does the poor teacher look for a firm foundation, when not only are the goalposts being moved, but the pitch is polymorphic?

Patricia Tarr (1989 p121):-

"History has shown us that art educators of the twentieth century did not replace nineteenth century pedagogy with a new form of art instruction, but succeeded only in moving this kind of art out of its mainstream place ... into a secondary position which satisfied the new value of self-expression."

In order for art education to regain a place of importance within school life ... will require .. a match between ... functions of school, societal values, and the values inherent in these art programs."

Though Tarr is only hoping for improved status for art within the curriculum, she has touched on the real problem, the relationship in the late twentieth century of art and life.

Until this fundamental issue is resolved, no future structure can be developed. Either contemporary pluralism will be accepted and some system evolved for its incorporation into education, or art will revert to some formal classical structure. Perhaps when science comes up with a unified cosmic theory, a new art form will follow.

The one consistent factor to emerge from all twentieth century scientific, psychological, and social engineering is "change". If our educational system is to have any future value it must prepare students for the concept of change as a natural phenomenon; that the only certainty is uncertainty. This involves acceptance of flexibility, adaptability, anticipation; all factors of the open-ended activity we call creativity.

Whereas there is provision in the British NC for the teaching of creativity, there are no guidelines as to how this is to be done, or even what creativity in art actually is. In the DBAE curriculum creative activity is seen largely as a problem solving exercise. If art education maintains its retrospective philosophy it will slip further and further away from the central position in the education system that it deserves.

There are several fundamental questions that must be answered first.

- 1 Art is now seen as a form of communication through symbols. What will the nature of art be in the twenty first century? Not an easy question, seeing as it was never agreed upon in the twentieth; though the disputes were usually about the validity of the symbols.
- 2 How and where does art fit in contemporary culture; how and where will it fit in the culture of the next generation?
- 3 What role should art play in education? Should art be considered merely as an indulgence for self-expression; or as a discipline to be taught; or as a process for the development of creative cognition?

However, before these questions can be answered we must first consider the nature of creativity itself; and clarify the concept in terms of current psychological knowledge.



## CHAPTER 3

### 3.0 REVIEW OF CREATIVITY LITERATURE

#### 3.1 Definitions of Aspects and Components of Creativity

"Creativity defies precise definition. this conclusion does not bother me at all. In fact I am quite happy with it. creativity is almost infinite. it involves every sense ... much of it is unseen, nonverbal and unconscious. therefore even if we had a precise conception of creativity, I am certain we would have difficulty putting it into words." E. P. Torrance (1988).

"Psychologists have carried out tests to measure creativity, experiments to explore it, exercises to enhance it, and investigations to reveal it ... a remarkable amount of imagination has been exercised in studying imagination, and we are none the worse for it. Alas, we are not too much wiser, either." P. Johnson-Laird (1988).

These recent comments show some current attitudes to the definition of creativity, yet the problem is not new; in 1964 Goldman was concerned that overuse of the term was such that it had come to mean nothing. This sentiment was echoed in 1967 by Wilbert Ray,

"Creativity has taken on the aura of a glittering generality in phrases such as 'creative advertising', 'creative news photography', 'creative camping' ... There is today even a toy which teaches children 'creative spelling'. p23.

Yet the desire for an acceptable definition still remains. Robert Prentky (1990) used the very complex, heterogenous nature of creativity to stress the need for urgent "taxonomic differentiation" to establish the fundamental attributes of the products, processes and people we label as creative.

Psychologists have approached this problem of definition from a variety of angles in the past, directing their researches mostly at either the creative person or the creative process; hoping to avoid the subjective quagmire of product criteria. The great trinity of creativity is made up of the three P's, Person, Process, Product, which are so interrelated as to make separate definitions difficult, yet have such large areas of difference as to resist any umbrella definition. The problem was highlighted by Hennesey and Amabile (1988):-

"Although many contemporary theorists think of creativity as a process and look for evidence of it in persons, their definitions most frequently use the characteristics of the product as the distinguishing sign of creativity."

Perhaps these problems were most neatly summed up by Claridge (1987 p134)

"I have often felt that as an explanatory concept in psychology, creativity has many of the qualities of a difficult but persuasive lover, whom reason tells one to abandon yet who continues to satisfy an inescapable need."

It is clear that creativity means different things to different people in different situations, from child's first scribble to a Shakespeare play, from the Parthenon to a Beethoven sonata. There are some authors who will readily accept the above items as creative products, yet question the existence of an entity which corresponds to the abstract noun "creativity"; insisting on the use of the adjective "creative", or its synonyms as being more specific descriptions or definitions.

The problems arising from the need to produce acceptable definitions for generalised psychological concepts was discussed by T. R. Miles (1957 p153) within the context of intelligence.

"I shall suggest ... that the word definition is ambiguous, and that different arguments are appropriate according to the sense in which the word "defining" is being used. The important point is that "defining" is not the name of a single procedure, but refers to a group of procedures having a certain "family resemblance" (to use Wittgenstein's phrase) between them. For many purposes it is helpful to classify behaviour into intelligent and unintelligent, but it does not follow that there is ... one permanently existing "thing" which intelligence is."

Pirsig (1991 p65) objected even to the need to "define",

"Definitions subordinate things to a tangle of intellectual relationships. They destroy real understanding.

Johnson-Laird (1988), however, offered an intelligent alternative procedure.

"On the whole, a priori definitions do not advance science, but impede it. The advance of science, however, enables us to frame superior a posteriori definitions."

Miles refined the nature of definition and produced three "types".

**Real:** which attempt to capture the essential meaning.

**Nominal:** the way in which words are typically, or specifically used.

**Operational:** concerned with observable, measurable operations.

Webberly and Litt (1986 p58) added a fourth category:

**Ostensive:** the highlighting of particular instances or examples of the general principle under consideration.

It seems impossible to find any consensus for a single "umbrella" definition of creativity. Even the dictionaries are not much help. Most will define "creative" but not "creativity". The Oxford dictionary links creativity somewhat vaguely with production and imagination. Collins defines "creative" as to bring into existence through intelligence or imagination. A thesaurus gives as synonyms:- fertile, gifted, ingenious, initiates, innovates, inspirational, invention, originality, visionary.

Historically there have been many definitions:-

Ribot (1906) ... thinking by analogy is the fundamental element of creative thinking.

Poincaré (1913) ... to create consists of making new combinations of associative elements that are useful.

Wallas (1926) ... identified four steps in the creative process.

Spearman (1930) ... saw creative thinking as a process of seeing or creating relationships.

Guilford ( 1950) ... conceptualized creativity in terms of the mental abilities involved in divergent production.

Thurstone (1952) ... maintained that creative thinking was the production of a novel idea.

Stein (1953) ... insisted that creativity must be defined in terms of the culture in which it appears.

Rogers (1954) ... the creative process is the emergence in action of a novel relational product, growing out of the uniqueness of the individual on the one hand, and the materials, events, people, or circumstances of his life on the other.

Barron (1955) ... the creative product must be both novel and appropriate or useful.

Taylor (1959) ... identified five levels of creativity.

Simon (1962) ... creativity is novelty, unconventionality, persistence and difficulty in problem formulation.

Bruner (1962) ... a creative product produces an effective surprise, and recognition that the idea is correct.

Koestler (1964) ... creativity often involves an idea that is novel or original that must be adaptive to reality.

Stein (1975) ... creativity is a process that results in novel work that is accepted as useful, tenable, or satisfying by a significant group of people at a given point in time.

Hayes (1981) ... creativity is a special kind of problem solving, that is the act of solving an ill-defined problem.

Amabile (1982) ... a product or idea is creative to the extent that expert observers agree that it is creative.

Simonton (1984) ... creativity is a variety of leadership.

Reber (1985) ... creativity is a term used to refer to mental processes that lead to solutions, ideas, conceptualizations, artistic forms, theories or products that are unique and novel.

Simon (1986) ... creativity does not depend on special abilities or unconscious processes and insights, but rather on ordinary cognitive processes that are applied in powerful ways.

Vaughan (1988) ... creativity typically applies to situations that have no single solution.

Hennessey (1988) ... a creative product is a novel and appropriate response to an open-ended task.

Martindale (1990) ... a creative idea must be original, it must be appropriate, and it must be put to some use.

Dowd (1990) ... true creativity is invention, or the process of making something new.

Armbruster (1990) ... the creative process involves the acquisition of knowledge and skills, the transformation of knowledge into new forms, and the rendering of these forms into a shareable product.

Goetz (1990) ... creativity has a connotation of originality, which may be characterised by novelty, difference, ingeniousness, unexpectedness or inventiveness.

A consensus of opinions about the nature of the creative process would seem to be that it is open, divergent thinking, involving new associations, relationships and analogies, applied to both problem formulation and solving. The outcome of these processes are variously ideas, theories, art forms and products which have two primary attributes, "novelty", variously described as originality, unconventionality and surprise; and "usefulness" further described as appropriate, correct, and adaptive to reality. Both these attributes have to be experienced and accepted by experts.

The creative person is someone who has the mental abilities to formulate and solve their problems, and the domain specific skills to produce and communicate their solutions.

Creativity is now seen not as a single factor but as a process involving various combinations of characteristics of the mind - some of which influence the degree of creative ability, some the direction in which it is applied, and others which inhibit its development.

The standard procedure for scientific research is to produce an operational definition of the subject under consideration, then explore the issues within that framework. E. P.

Torrance, one of the leaders in `creativity` research described his method (1965 p47):-

"I chose a process definition of creativity for research purposes. I thought that if I chose process as a focus, I could then ask what kind of person one must be to engage in the process successfully, what kinds of environments will facilitate it, and what kind of products will result from the successful operation of the process."

Unfortunately, Torrance makes no attempt to actually define this creative process, and he is not alone in this habit, as Hennessey and Amabile point out (1988 p14).

"Most creativity researchers, whether relying on creativity tests or on subjective assessments of products, have conducted their research in the absence of clear operational definitions."

The author's response to this plethora of ideas is to suggest that as no single definition is adequate, a reasonable approach to the study of creativity is to structure the definitions in the form of a pyramid, with a conceptual definition outlining the parameters of the study, then each level diversifying into progressively more elements, or more subtle aspects, or

focussing on more specific details.

Definitions within the field of creativity research in the visual arts would fit this model in the following manner.

Creative ability can only be assessed in terms of its products, whether these are paintings, musical scores, technological inventions, or the answers to creativity tests. So for the purpose of this study, where the products are "graphic images", definitions relevant to creativity in the visual arts would be as follows:-

**Creativity** is the ability of the mind to generate original ideas in a visual form.

**The Creative Process** is a particular group of cognitive abilities and styles which produce these original visual ideas.

**The Creative Product** is the concrete demonstration of these ideas.

**The Creative Personality** is the constellation of traits normally associated with the producers of creative products.

Within each of the above areas would be the more detailed elements:-

- evaluation criteria
- levels of ability and achievement
- environmental and motivational influences.

From the volume and range of definitions of creativity it is clear that research in this area has intensified and diversified in recent years. After the initial boom in interest in the 1950s and 1960s, interest waned during the 1970s, but with the development of the paradigm of cognitive science, interest in how people produce original ideas has returned. Research into creativity has generally been directed into one or other of the great trinity of creativity, **Process**, **Product**, and **Person**. Areas which are obviously closely inter-related, ie. creative thinking is a process, exemplified by the products of people.

This study will also adopt this format of research and will look at each area in turn through the published literature, and will attempt to relate the theories to the domains of art and art education.

### 3.2 THE CREATIVE PROCESS

The concept of a creative "process" was first formulated by Brewster Ghiselin, who in 1952 published "The Creative Process", a collection of statements from outstandingly creative scientists, authors, and painters, as to how they thought they produced or invented their ideas, poems or pictures.

However, as early as 1926, Graham Wallas had produced a model of thinking which he believed enhanced the production of new ideas:-

"...if we take a single achievement of thought - the making of a new generalization or invention, or the poetical expression of a new idea - and ask how it was brought about. We can then roughly dissect out a continuous process, with a beginning and a middle and an end of its own."(p91)

Wallas labelled these stages after Helmholtz (1891), as Preparation, Incubation and Illumination, then added his own fourth stage of Verification. He also insisted :-

"...in the case of the more difficult forms of creative thought....it is desirable not only that there should be an interval free from conscious thought....but that nothing should interfere with the free working of the unconscious or partially conscious processes of the mind." (p95)

This "process" was further illustrated and defined by other writers, including Rogers (1954). But it was Herbert Simon (1969), who moved creativity out of the genius domain of special abilities and unconscious insight, and placed it firmly within the grasp of normal people, when he claimed that creativity depends on ordinary cognitive processes that are applied in powerful ways.

Support for the idea of creativity as a cognitive process came from Armbruster (1990 p177), who described the creative process as the acquisition and transformation of knowledge into the new forms: "Perceiving, learning, thinking, and remembering - this is the stuff of creativity". However, Martindale (1990 p211), resisted this simplistic idea, and pointed out that the creative process:-

" ... involved a type of cognition that seems only to occur within a matrix of associated motivational, attitudinal, and personalogical traits."

Other distinguished researchers clarify, (or further confuse) the situation by claiming that

the creative process only exists within a larger system of social networks and problem solving domains; and that the individual producer is only one of the many parts. This "systems" view does not preclude the "individual" view, but provides insights regarding creative persons and their function in society.

The main link between the creative process and the production of graphic works of art is the process of visual perception. How we see, what we see, how we interpret/store/recall/adapt/change/generate images, this is the process of visual perception and it is also the core process of the visual arts. The ability to "see relationships among elements" is an attribution commonly made toward authors of artistic achievements. Authors strongly emphasize the role of visual imagery and the manipulation of visual codes in the creative process. If art is the generation of visual images, these images must initially have been drawn from the external world. Even Jungian genetic archetypes must at some time in the past have evolved in response to some external 'reality'. For the purpose of this study, art consists of graphic pictorial representation, either the recall from memory or the generation and the mental manipulation of images.

Further complications are added by the fact that we only know of the degree of perceptual cognition of another person by the quality of their RESPONSE, ie a product. Which adds visualisation, imagination, motor skills and other elements of the 'productive regeneration' of thoughts. Where then does this leave us?

The study of the human mind is immensely complex, is it then possible to isolate a discrete 'creative' function, and if so what does it consist of, and how do we measure it? Within the domain of the visual arts all creative work is channelled through the avenues of perception, so this would seem the logical place to start. Before we can explain the creative process, we must first identify the influences and effects of the perceptual process.

Research into perception has also incorporated advances made in other areas of science ie optics, physiology, neural networks, information processing and artificial intelligence. As our need for sensation-based information has declined, and our need for and use of



communication has increased, humans have added a new dimension to the problems of perception. The evolution of language and written communications means that we have adapted to the presentation of our environment in purely propositional terms. We are comfortable with spatial words now in common usage, like near, behind, next to, above, right, etc. environmental concepts can now be formed without any direct sensation or perceptual input. Huttenlocher (1977) describes how his test subjects were able to form spatial images and solve spatial problems from a purely verbal /auditory source. Penrose (1989 pp176-206) offers examples of mathematicians forming visual images of formulae and equations, one of which describes the space-time 'picture' of freefall articles as taking the form of the bell of a trumpet or saxophone. Also D. A. Huffman, Professor of Computer Sciences at the University of California, has expressed mathematical theorems as intricate folded paper sculptures.

Ultimately our concept of 'reality' is based on our individual or collective beliefs, either religious or scientific, faith or empiricism, and this reality, that is our perception of reality, is becoming less sensation-based and more cognitively modelled. Most visual artists produce their work without ever knowing or understanding the mental processes involved in these activities; largely they externalise their images and then adapt / develop/ relate these forms. If we are to understand the creative process that drives this work we must first understand something of the process of visual perception. One key to this process lies in our concept of "reality", after all it is this that we perceive.

### **3.21 Perception and Reality: Classical Space v Twentieth Century Physics**

The twin problems of perception and reality have intrigued Western thinkers since the Greeks, who fixed their reality with mathematics. To the Greeks after Pythagoras (532BC), mathematical knowledge appeared to be certain and exact, and when applied to the real world it was thought to provide an ideal framework into which empirical knowledge must fit. From Plato came the belief that:

"Mathematical ideas have an existence of their own, and inhabit an ideal world, accessible only through the intellect".

By 300BC Euclid had "fixed" space through geometry, and presented a body of knowledge as truths elevated to compare with religious faith. This power of mathematics was neatly summarised by Suzanne Langer (1941 p18):

"Mathematics is pure reason, yet it falls in with the needs of scientific thought, and fits the observed world of facts neatly.

... a mathematician does not profess to say anything about existence, reality, or the efficacy of "things" at all.

Mathematical constructions are only symbols, they have meanings in terms of relationships not of substance, something in reality answers to them, and they are not supposed to be items in that reality."

The geometric basis for the science of space was reaffirmed by Kant (1781), and in explaining how 'a priori' knowledge applies to the physical world, he maintained that the space of Euclid was a fundamental intuition, and that the mind was obliged to organise spatial experience according to that intuition. So our 'a priori' knowledge of space agrees with our experience of space. Doubts as to the Euclidean character of physical space were not expressed until early in the nineteenth century by the "new" geometries of Gauss, Bolyai, Lobachevsky and Riemann. These Projective Geometries showed that the mind is not restricted to thinking about space only in Euclidean terms. Bertrand Russell (1897) supported the Kantian idea of an external space, outside our minds, but claimed that the 'a priori' properties of this space obeyed the laws of Projective not Euclidean space.

Mathematical objects are just concepts, mental idealisations, often stimulated by the appearance and seeming order of the world about us. There does, however, often appear to be some profound reality about these concepts, going quite beyond the mental deliberations of any particular mathematician. Penrose (1989 p95):—

"It is as though human thought is being guided towards some external truth - a truth which has a reality of its own, and which is revealed only partially to any one of us."

Penrose cites the example of the Mandelbrot Set to demonstrate this hidden reality. This set was not the invention of any one person or team, and Mandelbrot himself had no prior concept of the fantastic elaboration inherent there. The complete structure cannot be fully

comprehended by any individual, nor revealed by any computer (Appendix 3.1). It would seem that this structure is not just part of our minds, it has a reality of its own. It was not an invention, it was a discovery. Like Mount Everest, the Mandelbrot Set was just there. The idea that Euclidean space was "real" and therefore fundamental was further challenged by Minkowski's idea that space and time had to be considered together as a single entity, "4D Space-Time". Minkowski, who was one of Einstein's most influential teachers, believed that space and time as separate, discrete entities were doomed to fade away, and that only the union of space and time can describe `reality`.

This conceptual breakup of the physical universe was further encouraged by the experiments of scientists like Michelson (1881) and Lorentz (1887), and the mathematician Poincaré who in 1889 asserted that within our universe there was no place, no frame of reference that was absolutely at rest. The work of these and other scientists working on radiation pioneered the two theories that revolutionised science and society in the twentieth century. In 1905 Albert Einstein published his Special Theory, and in 1916 his General Theory of Relativity, which described the force of gravity and the large scale structure of the universe.

In 1900 Max Planck proposed the idea that radiation appears as QUANTA of energy, in the form of both waves and particles. This Quantum Theory was later developed in the 1920s, by the mathematical physicists Born, Broglie, Dirac, Heisenberg, Jordan and Schrodinger into Quantum Mechanics, a theory which dealt with phenomena on extremely small scales, less than one billionth part of an inch. Even though these theories were mutually inconsistent they were to transform the classical physics of the nineteenth century at the most fundamental level, into a world of transitory particles and indeterminate events. Zukav (1979):

"According to Quantum Mechanics there is no such thing as objectivity ... We are a part of nature, and when we study nature there is no way round the fact that nature is studying itself. Physics has become a branch of psychology, or perhaps the other way round." p 183.

Lockwood (1989), demands that philosophy makes a similar reappraisal:-

"... philosophers have been apt to take matter for granted, assuming that

it is mind rather than matter that is philosophically problematic ... they tend to think of matter along essentially Newtonian lines. The Newtonian conception of matter is incorrect, however, and it is high time that philosophers began properly to take on board the conception that has replaced it."

"...the world is quantum-mechanical through and through, and the classical picture of reality ... is deeply inadequate." (p 178 )

While acknowledging that much of the phenomena of the "real" world can still be analysed in traditional terms, acceptance of quantum mechanics involves a radically new conception of the relationship between observation and reality, which Lockwood holds will "strike at the heart of our common-sense conception of what happens when one observes or measures something".

This point of view has the support of Penrose (1989), who acknowledging that there is an external reality, independent of ourselves and unaffected by how we choose to look at it, goes on to say:

"We must try to understand ... how quantum theory forces us to change our view of physical reality. The very existence of "solid bodies: ... require quantum theory for their explanation." (p 226 )

Lockwood extended the popular account of the theory, that the observer plays an active role, and has a physical effect on the object, by arguing that theory shows how the consciousness of the observer maps on to the physical world.

"Assuming that the quantum-mechanical description of the physical world is essentially correct ... the physical world must have an intrinsic nature ... and in consciousness, that intrinsic nature makes itself manifest." (p 238 )

Other writers including Deutsch (1985), Frohlich (1986), Marshall (1989), Penrose (1987), Walker (1970), support these views and the logical extension of them, that consciousness itself is a quantum-mechanical phenomenon, in essence "the brain is a quantum computer".

The concept of a quantum computer is a development of a "Turing machine" which in itself is a mathematical abstraction rather than a piece of hardware. There is considerable scientific debate as to whether quantum computers could exist in reality, and much of it to

the layman, is pseudo-academic. If the universe operates as a quantum-mechanic system, and man is a prisoner of his own biology, chemistry, and ultimately the same physics as the rest of the universe, how can he not be quantum mechanical? The alternative is to believe that mind and matter are separate, that consciousness is qualitatively different from the rest of the universe. Did the Sun revolve around the Earth until Copernicus told it not to, did blood not circulate until Harvey discovered it, was America not there until 1492?

The scientists' response to the question of whether the human brain could be a quantum computer seems to hinge on whether or not they could build such a machine. The answer seems to be - not yet. Deutsch is convinced that they will be built and points out that the basic QC memory elements already exist in the form of SQUIDS (superconducting quantum interface devices) as used in body scanners. But science moves from speculation through inference to evidence, and it would seem that in this case we have moved on from speculation to consider the necessary conditions for the viability of a QC, "superconductivity" and "dipole-oscillation". Both these conditions have been studied at some length, and though frequently found in "nature", never in a biological form capable of operating in a human system, until recently.

"Bose condensation", an analogous form of superconductivity has been shown by Frohlich and Marshall to exist in bio-systems; and certain protein molecules are dipole-oscillators in their own right, as are the molecules in cell membranes.

The possibility of the existence of a QC mechanism has the support of Sewell (1986), and Bhaumik, Wu and Austin, in Bond and Huth (1986), who conclude that the basic concept has been shown to be on firm theoretical ground.

Furthermore, Marshall (1989) in relating these ideas to the action of general anaesthetics, suggests that the obliteration of consciousness is directly connected to the impairment of the ability of certain cells to participate in molecular dipole oscillation. Marshall then takes his argument one (large) step further, with the support of Penrose (1987), by proposing that these cell membranes help to sustain the collective oscillatory states that

constitute "consciousness"; ie that the character of these states are the physical basis of the unit of consciousness.

Our theorists appear to be in a similar situation to Copernicus in the early sixteenth century, reported by Ronan (1983 p329):

"... what evidence was there for the Earth's motion",  
"...why should God leave a vast gap between the planets and the stars",  
"...such motion would shake the earth to bits".

For the empirical proof of Copernican space, science had to wait 300 years.

Some day science may give a more profound understanding of nature than quantum theory can provide. The standard quantum theory appears to apply only at sub-atomic levels; problems, puzzles and paradoxes occur when the theory is magnified to the classic level of normal perception. Penrose speculates that the resolution of these problems must lie in an "improved" quantum theory, and cites as a precedent Einstein's development of Newtonian gravity.

Any scientific theory is only ever a hypothesis, supported by experiment until a new observation disagrees. Perhaps with the idea of "quantum-mechanical" man, we are in the situation described by Lockwood: (1989 p xi )

"The real objection to the positions defended here is, in all probability, not so much that they are crazy, but that they are not crazy enough."

### **3.22 Art and Perception**

Changes in the scientific view of world reality are often mirrored in the changing artistic views. Whatever labels are given to differing 'styles', art has always been the illustration and communication of 'reality', or some aspect of that reality, a place or event within.

This response to external reality is illustrated by changes in style and method from era to era, and 'ism' to 'ism' (usually just labels given retrospectively by historians), and is directly influenced by the values of contemporary society. At different times this influence has been religious, philosophical, aesthetic and for the last 150 years scientific. Often these external influences have a major stylistic impact on the visual representation

of reality, religion on the Byzantines, philosophy on the Romantics, science on the Impressionists, technology on the Futurists and psychology on the Surrealists.

Historically, the conventions evolved under these influences have been freely adopted rather than imposed, and these changes are frequently reflected in changes in attitude to space. Primitive art is an art of objects, space is usually only a background or an element in the design. Even the Egyptians, who organised and measured their geographical environment, did not allow their obvious spatial awareness to impinge on their art, which was strictly governed by their religious beliefs of space and time. Egyptian art outside of the textbooks is filled with cameos of self expression and individual creativity as the artists stretched their formal conventions. Yet in the main they stayed within the accepted canons of their repository of standard forms. The Egyptians selected and evaluated images, for theirs was a conceptual not a figurative art. They were concerned with constructing ideals not just external appearances. These aims were a direct expression of the permanence of reality and the fixed 'position' of man in the cosmos, an attitude neatly outlined by Brunner (1957):

"Egyptians do not struggle to achieve a 'personal viewpoint', they conceive that their task is to integrate themselves into the absolute and universal order which was laid down once and for all by God; they do not arrive at knowledge through critical perception but through believing acceptance, in the role of the 'truly silent man', one who is silent before Ma'at, the divine order." ( p 7 )

Although their art tended towards the manipulation of flat planes the Egyptian did not suppress space, it was just not necessary. Where some idea of spatial position was needed they expressed it through the overlapping and layering of forms.

The developing interest in the representation of the illusion of space as 'depth', coincided with the growing 'anthropo-centricity' of 'man the individual'. As societies diversified and cultures inter-mixed through increases in trade and transport, new religions and philosophies evolved. In Greece these new ideas elevated man the individual to a new status within a new external reality, and in fact changed his viewpoint of 'reality' itself. Yet even then the actual expression of the spatial elements of this reality took only a very limited, but significant form. Building on the technical achievements of the Egyptians,

the Greek sculptors were primarily concerned with the liberation of the human form, the freeing of figures to move dynamically in space.

The next important development in the pictorial representation of three dimensional space did not take place for nearly 2000 years, with the evolution of a mathematical 'linear perspective' system devised by Filippo Brunelleschi in the early fifteenth century. This theory did not appear as an immaculate conception, it was derived from an amalgamation of ideas from different disciplines, from different countries, and even from different eras. Anaxogarus and Democritus had both investigated perspective in ancient Greece, and Plato had declared perspective a "negative phenomenon, a sign of the imperfection of the eye, which deforms things". Euclid produced his 'Optica', applying geometry to vision. The Roman architect Vitruvius published antique stage designs based on a form of linear perspective. In 140AD Ptolemy wrote a new version of 'Optica', and then 'Geographica' based on the perspective projections of his maps. In 175AD the Graeco-Roman surgeon Galen examined the physiological structure of the eye, and though his findings were erroneous they were accepted until 1600.

The great Arab physicist Alhazen absorbed all these early ideas and transformed them with his own theories on visual perception into one volume 'Perspectiva', which was read all over Europe. In 1267, Roger Bacon completed his "Opus Majus" adapting all the known optical theories to fit the Christian notion of space. However, the most popular treatise on optics circulated throughout Europe was written by John Pecham in 1270. All these works were known through their Latin translations and transcriptions. The culmination of this knowledge in the theories and experiments of Brunelleschi only makes sense when considered with what was currently debated in Florence in the early 1400s. The anthology of writings on optics, 'Perspectiva Communis' of Blasius (1390) was popular and widely read in Florence at this time. In 1400 a copy of Ptolemy's 'Geographica' arrived to be studied avidly by the local scholars, and in 1414 in the library of the monastery of Monte Cassino, the books on architecture and theatre design by Vitruvius (25BC) were discovered and celebrated throughout Italy.



Although the principles of the representation of space as depth on the picture plane were solved mathematically and through experiment by Brunelleschi, it was Leon Battista Alberti (1404-72) who first formulated the ideas into a coherent theory (1434/5) in his 'Treatise on Painting', transforming the previous anecdotal practical 'hints' of writers like Cellini into a new and workable philosophy of art.

Brunelleschi had developed a completely focussed system of perspective, with mathematically regular diminution towards a fixed vanishing point, transposing the everyday experience of a three-dimensional 'real' world onto the illusionary pictorial 2 dimensional space. White (1957) labelled Alberti's great achievement as the reduction of the 'mathematical labour' of Brunelleschi's theory, bringing the new ideas "within the realm of practicality" for the ordinary artist. Alberti himself wrote (1966):

"Regard me here (in perspective) not as a mathematician, but as a painter, for the former, ignoring all matter, measures things exclusively with his mind, whereas we desire that it be viewed with the eyes." (p 42)

The effect on painting was dramatic, space was now created first, then the solid objects arranged within. Space now contained the objects by which it was formerly created.

The imitation of a visual 'spatial' reality became the painter's starting point, following Alberti's dictum that the picture surface was an 'open window'.

The experiments with linear perspective were subsequently developed by Paolo Uccello (c1397-1475), Piero della Francesca (c1415-92), and Leonardo da Vinci (1452-1519); but it would be a misconception to believe that the evolution of perspective was purely scientific. Mathematical it certainly was, but the need for change in artistic expression came from a variety of sources. In the early fourteenth century Giotto and his pupil Taddeo Gaddi created a spatial environment for their figures by angling the buildings like stage sets, Lorenzetti used diminishing floor tiles, and Northern Europeans like van Eyck developed space through careful observation of scale and light. Add to these experiments the changing social conditions of the period, from the extremes of 'haute couture' fashion, and the rise in influence of the merchant and the bourgeoisie, to the open acceptance of humanist philosophy, and the cultural system of Florence was ripe for a new impetus.

Florentine culture was essentially urban, and perspective was the ideal vehicle for the representation of its architecture and the status of its citizens. Clark (1969):

"The belief that one could represent a man in a real setting and calculate his position ... expressed symbolically a new idea about man's place in the scheme of things, and man's control over his own destiny."(p 99)

Once established as the basic format for all painting, perspective became the means for two distinct ends. One school led by Albrecht Durer (1471-1528) through to Velasquez (1599-1660), aimed to increase the sense of reality, the other celebrated the power of the illusion of perspective culminating in the spectacular work of Andrea Pozzo (1652-1709).

In analysing the art of the Renaissance era, Gablik (1976) concluded that:

"... perspective reflected a world which was permanent and fixed in its ways, modelling on absolute space and time ... geometry was truth and all nature was a vast geometrical system."(p 173)

Whilst supporting the overall view that the Renaissance was fascinated by geometry, Kubovy (1986) believes that perspective was not a 'fixed' system, but was 'routinely violated' by individual artists for their own reasons.

"Perspective often enabled ... a form that could produce in the viewer spiritual effects that could not have been achieved by any other formal means."(p 35)

In these terms, Kubovy (p124) defines perspective as:

"... the whole complex practice of Renaissance artists in the pictorial organisation of space, not just the geometrical projections, but the modifications of that geometry introduced in deference to the real character of human perception."

### **3.23 Theories of Perception: PDP / Imagery / Mental Models**

Studies of visual perception invariably start with the structure of the eye, the nature of vision, and the physics of light; then they move on to study the brain. The eye collects an impression of the external world which the brain interprets. This duality has its roots deep in philosophy. The Greeks modelled their knowledge on vision, Democritus (420BC) claimed all knowledge rests on perception, an attitude reaffirmed by the 18th century

empiricists who emphasised the importance of the sensory organs, and made 'observation' the starting point of all knowledge. Even in the last quarter of this century scientists still worked to the 200 year old doctrine of Immanuel Kant, which divided sensing from understanding. Early neurological science seemed to support this viewpoint by discovering that the retina connects directly to one distinct part of the brain (PVC) with high topographical precision. This primary visual cortex effectively contains a map of the entire retinal field, lending apparent credence to the phrases like 'in the mind's eye', and 'pictures in my head'.

"The mind, that ocean where each kind  
Does straight its own resemblance find,  
Yet it creates, transcending these  
Far other worlds, and other seas."

Andrew Marvell (1621-78)

Current thinking is that interpretation is now seen as an inextricable part of sensation; the brain does not just analyse images, it actively constructs a visual world. Johnson-Laird (1983 p156);

"Human beings, of course, do not apprehend the world directly; they possess only an internal representation of it, because perception is the construction of a model of the world. They are unable to compare this perceptual representation directly with the world - it IS their world."

Conflicting theories of perception have indulged in intellectual wars of words within the paradigm of cognitive science for over 30 years, and by and large these disputes have emphasised some particular aspect of perception. Recently however, an entirely different theory has evolved. Not a destructive theory aimed at driving out all previous notions, but a unifying theory aimed at bringing together all aspects of perception in a format which accounts for all the previously diverse elements. Various referred to as 'parallel distributed processing' (PDP), or 'neural networks', it seems to have settled under the more generic term of CONNECTIONISM. Inspired by the results of research into the nervous system, Connectionism offered a radically different conception of the basic processing system of the brain.

The rise of cognitive science as the basic paradigm for research was based on the concept

that cognition was the manipulation of 'symbols'. These symbols could refer to external phenomena, and could be manipulated by the brain according to rules. These rules governed all cognitive actions. The success of this paradigm lay in part with the fact that its historic roots were deep in the fabric of philosophy, in the study of logic. It has been a strongly held view for centuries that the rules of logic are the rules of thought.

This century's most useful scientific tool, the digital computer, is itself only a device for implementing formal logical systems. The rules of a computer program, like the rules of logic, only use the 'form' of a symbol, not its meaning. Newell and Simon (1967) took the properties of computing still further by identifying the semantic process within the computing system, and artificial intelligence programs replaced formal logic as the closest external approximations to the human mind. Unfortunately this also had the effect of reinforcing the 'symbolist' point of view. The re-emergence of Connectionism after the earlier apparent demise of interest in neural networks was, therefore, all the more surprising. The early theoretical work on the development of network models of cognition based on the neural networks in the brain was done by McCulloch and Pitts (1943), who showed that any logical operations could be performed by a network; and then in 1947, how a network could perform pattern recognition. John von Neumann (1956) added reliability to the system and developed the functional architecture which is still the basis of most digital computers. Rosenblatt (1958), experimented with layered networks which could pass inputs through in either direction and so produced networks that could 'learn'. His 'Perceptron Convergence Theorem' differed from the conventional 'symbolic' systems by its use of statistical patterns (the proportion of units activated) rather than logic.

"For the first time, we have a machine which is capable of having original ideas ... established beyond doubt, the feasibility and principle of non-human systems which may embody human cognitive functions..." (p449)

Connectionist research seemed out of favour for nearly 20 years as the theories of symbolic perception grew in stature, but by the early 1980s several factors evolved which challenged the limitations of the symbolic cognitive model. During these intervening

years there had been considerable advances in neuroscience, like the identification of new multi-layered networks, and the clarification of the neural based architecture of the mind.

Bechtel and Abrahamsen (1991 p20), offer a neat definition of the properties of

Connectionist networks:

"(They) are intricate systems of simple units which dynamically adapt to their environments ... even those with only a few units can behave with surprising complexity and subtlety. This is because processing is occurring in parallel and interactively."

Their appeal for cognitive modelling lies in their "neural plausibility" and their "capacity to learn from experience"; they use "parallel processing" and are "inter-active". This gives us a model that is close to a description of the human brain in action and also fits what is now known of its physical structure.

Recent work in perceptual tasks by researchers using connectionist networks, include "the representation of visual scenes" by Cottrell et al (1987), "recognition of complex objectives" by Honaver and Uhr (1988), and "recognition of hand-written characters" by Skrzypek and Hoffman (1989).

Although the connectionist paradigm seems to represent at this time, the best opportunities for progress in the analysis of perception, there is still considerable support for alternative theories, and considerable controversy about the future direction of research. One of the major objections to the connectionist model was raised by Lachter et al (1988), who claimed that the important work is not done by the neural network but by the way in which the information is encoded, and that these codings are derived from the symbolic theories.

"Trying to understand perception by studying only neurons is like trying to understand bird flight by studying only feathers."

This quotation by David Marr (1982) shows something of the strength of feeling aroused by the perception debate. Although perception has been the subject of speculation by scientists and philosophers for centuries, and had formed an important aspect of the Gestalt psychology of Wertheimer, Koffka and Kohler, the dominant Behaviourist

movement had blocked the advancement of perceptual theory until after the second world war. Any positive effects of war are usually described in practical terms such as the advancement of scientific research and technological development, but a *significant* psychological effect is a reappraisal of 'values'.

The re-evaluation of Behaviourism was initiated by Karl Lashley in September 1948, when he castigated the restrictions of behaviourist dogma and proposed a new agenda for research, declaring that "... adherence to behaviourist canons was making a scientific study of mind impossible". Although the birth of cognitive science is normally dated as September 1956, the Lashley speech was labelled by Gardner (1983 p15) as the 'critical moment'.

"Between the 'hard line' credo of the Establishment behaviourists and the unbridled conjecturing of the Freudians, it was difficult to focus on a scientifically respectable way on the territory of human thought processes."

In his history of the cognitive revolution, Gardner claims that three things were necessary for the evolution of Cognitive Science, the demise of Behaviourism, the integration of the social sciences and the development of the computer. All were achieved in the decade after the war.

Building on the works of Turing, von Neumann, McCulloch and Pitts, Norbert Wiener published in 1948 his "Cybernetics", claiming that the functioning of living organisms and the operation of communication machines exhibited crucial parallels. And Claude Shannon developed an 'information theory', wherein a 'bit' of information could be divorced from its content and processed in binary form. By 1956 a group of young mathematicians, including McCarthy, Minsky, Newell and Simon, met to discuss the problem-solving potential of computers, developing ideas for programs that would enable computers to reason logically, recognise patterns and even play games like chess. This form of Artificial Intelligence (AI), evolved at the same time as developments in neurobiology were progressing, thanks to a regular supply of post-war humans with part-brains.

The analogy of the brain as a computer, operating in logical steps based on symbolic propositions, and cognition/perception as the mental manipulation of these symbols, became the dominant paradigm of post-war cognitive psychology. Despite the warnings of people like Ulric Neisser (1967 p9);

"None of (these programs) does even remote justice to the complexity of human mental processes. Unlike men, 'artificially intelligent' programs tend to be single minded, undistractable, and unemotional ... This book can be construed as an extensive argument against models of this kind, and also against other simplistic theories of the cognitive processes."

Perhaps the most significant work in visual perception that came out of the AI movement, was devised by David Marr (1945-80). Marr was influenced by Chomsky's theories on the structure of language and how an organism can learn and understand it. Working at MIT from 1970-80, he studies three main topics; the visual system's recovery of lines and edges, stereoscopic vision, and the representation in the brain of objects. Marr wanted to find out how the human visual system works, and taking into account the results of neural and psychological research he tried to build a computer model of the way vision operates in the real world.

"To understand how the neurons of the visual system actually accomplish their tasks, one must draw upon the mathematical principles involved in interpreting images." (1982 p187)

Marr discovered a 'modular' system for computing three different aspects of visual information; motion, colour, and stereoscopy. This modular system is close to Zeki's concept of 'functional specialisation' in the visual cortex, which supposed that "colour, form, motion, and possibly other attributes of the visual world are processed separately", in "four parallel systems" (1992 p49). The leading sceptic of the computer approach to perception was J. J. Gibson (1904-79), who though starting from the same point as Marr, the assessment of 'visual reality', came to very different conclusions. In fact Gibson published his first book on perception in 1950 when Marr was only 5 years old, so their dispute was philosophical rather than practical. Gibson added three new concepts to the study of perception; visual flow, optic array, ecological optics; and in 1979 he asked the basic question which is of particular relevance to the visual arts:-

"How does one obtain constant perceptions in everyday life on the basis of continually changing sensations."(p 11)

Gibson found the traditional distinction between sensation and perception to be spurious, and considered that the pattern of light projected onto the eye, the 'optic array', contained all the information from the environment needed to serve perception. Gibson believed that the environment provides man with all the information necessary for his survival, contained in the ambient optic array, in the forms of 'affordances' (stimulus useful to the observer) and 'invariants' (features which do not change with motion or rotation). These items are not constructed or deduced by the brain, but are contained in the optic array to be 'discovered'. Marr's response to this was to point out that the detection of 'invariants' was an 'information processing' problem.

Despite the efforts of Gibson and his supporters, the dominant paradigm of perception research was "Man the Information-Processor". However, there was further opposition from another camp. In the early 1970s Roger Shepard and his associates also began to question the AI approach, which tried to explain all thought in terms of ONE kind of computational mechanism, that of the serial, digital computer which processes only that kind of information, represented in the brain by lists of networks of propositions.

Building on the theories of Allan Paivio (1971), this group proposed an additional mode of perception, mental imagery. The concept of imagery was of course, nothing really new, it had been discussed by Gustav Fechner in 1860, and later by Francis Galton, who in 1869 reported experiences of visualisation and mental imagery in famous scientists. The rejuvenated theories of Imagery were formulated and defended by Stephen Kosslyn. Supporting Shepard's thesis that people can generate mental images and rotate them in mental space, Kosslyn went further and claimed that information was stored in the brain as mental images, and that manipulation of these images was a basic cognitive capacity. He demonstrated through a series of tests that Imagery (quasi-pictorial) was a primary way of symbolising and representing information. These images he likened (1981), to VDU displays from a computer memory, a 'mind's eye device', with the ability to interpret and transform information. By drawing on long term memory, Kosslyn believes that we



can generate images, combining descriptive (language) and depictive (picture) memory data.

This idea of an 'image generation' component has the support of Farah (1988 p54), who found and isolated this process in the posterior left hemisphere of the brain; and showed that it could be destroyed independently by damage to the brain.

Kosslyn and his associates produced volumes of experimental data, and computer simulated models of their experiments, but their theories remain amongst the most controversial in modern psychology. Consequently they have attracted criticism from many directions including Neisser (1979) "the thinking of Kosslyn ... is completely detached from everything we know about human action or perception". But the major attack on the work of Kosslyn has been led by Zenon Pylyshyn, who has directed a stream of articles, lectures and books (1977-84) against the notion of 'imagery' as a separate human capacity. Pylyshyn's opposition is based on his theory that knowledge is encoded in propositions, and man simply draws on these propositions to construct what 'appears' to be an image. The cornerstone of his theory is that the computer is not just a metaphor for the brain, but that "cognition is computation". In 1984, Pylyshyn divided the behaviour of a biological system into two properties; 'intrinsic', the basic info-processing mechanism, which he labelled the 'functional architecture', and "extrinsic" the methods by which the system is able to represent the external world.

The Kosslyn/Pylyshyn debate was summarised by Gardner (1985 p334):

"The issue is not whether images may be derived from more primitive ... symbolic representations, but rather whether a quasi-pictorial image has the properties permitting its treatment as a distinct form of representation."

While acknowledging that Pylyshyn represents the mainstream of computer scientists who have a long-standing commitment to digital symbol information processing, Gardner himself supports the Kosslyn model;

"Kosslyn has the stronger line of argument ... If one is trying to model the way the mind works, and a certain line of modelling consistently produces rich and revealing results, then it is folly to dismiss that line." p335

Though no-one seriously doubts the conscious phenomena of imagery the actual nature of these 'images' is a matter that still divides psychologists. The growth of the Artificial Intelligence movement gave rise to the theory that the brain operates from logical propositions, ie words as symbols, and has tied perception to the acquisition of knowledge. This is in direct opposition to the 'imagists' who believe in the primacy of vision, and the ability of the brain to generate and manipulate images, and so solve non-verbal problems.

Another scientist who was involved in this debate is Philip Johnson-Laird, whose 1983 theory suggested a compromise solution to the issue. He proposed that there are three major kinds of representation in the brain; mental models, propositional representations (PR), and images. Then he further claimed that PR and images are a special class of mental model. Combining images and propositions in this manner neatly defused the principle issue of the perception debate. If we assume that the Johnson-Laird concept of Mental Models is an adequate metaphor for the process of thinking and perceiving, and if we related this to the Connectionist physical structure of brain networks, what more can we establish about perception before we disappear into the speculations of metaphysics? Many scientists are working to construct a model of the mind, and new information is being produced almost daily, but will any model however accurate, explain its function. Or are we still in the position of Einstein, looking for the mechanism of his closed watch; or even Leibnitz and his mill, who saw the works but still did not know why; or ultimately Wittgenstein who asked even if we found it, how would we know what we had found? No analysis of the structure and mechanics of a motor car can tell us of the journeys it has made, or why. Perhaps an accurate description of the current situation would be a paraphrase of David Marr, not only will we never understand flight by studying feathers, we have not yet realised that the bird can sing. Nevertheless scientific paradigms only change when ideas become exhausted or repetitive, so perhaps the road to birdsong will be strewn with feathers.

The creative process is by definition a mental process, that is the thinking goes on in the

head of the creator; so though there may be emotional, motivational, and situational influences, ultimately creativity is a cognitive process.

It is also clear from a study of contemporary literature on cognitive psychology, that not only is there very little agreement between scientists, but we still know very little about an immensely complex subject, the actual creative process. We have at least escaped from the Wallas / Ghiselin, "give a genius time to incubate and the unconscious mind will deliver the goods" description of the creative process, and now at least have creativity framed as a potential aspect of every person; plus we have a vastly improved knowledge of the perceptual, cognitive, emotional and environmental influences on that process. But we are still some way from a convenient universal theory, Flowers and Garbin (1990 p149), highlight one possible way forward:

"Given the anecdotal and self-report evidence for a relationship between creative behaviour and aspects of perceptual processing, there is a notable void in either research or theoretical articles specifically focused on these issues. Research efforts directed at understanding perceptual processes have directed theories, models, and descriptions of behaviour that apply to perception in general, as opposed to individuals. The very term creativity, on the other hand, denotes an attribute that individuals presumably possess (or at least exhibit) in different amounts."

Until we know a great deal more, the enhancement of creativity through teaching remains a very speculative domain. Even in the world of art, which should be at the forefront of innovation (and experience) in education, we are still largely in the situation as described by the 1993 Turner Prize-winner, Rachel Whiteread (1994 TES 22.4.94 p3):-

"With art education you're not really taught anything. It's about unlearning all those things you've learned at school."

### 3.3 THE CREATIVE PRODUCT

#### 3.31 Problems of Identification

The essence of creativity is the product. Without a product there is no creativity, how would we know, what other evidence could there be?

This problem has drawn provocative remarks from several investigators. When challenged that creativity must be identified by its products, Barron (1968) replied, "No".

Later he elaborated:-

"It would be unusual to find no evidence of creativity in behaviour, even though the creative process was occurring, but I would argue that this sometimes happens - that is no sign of it appears." (p 23)

Csikszentmihalyi (1988 p326) adds to the problem:-

"It is impossible to tell whether or not an object is creative simply by looking at it."

Benack, Bassenches, and Swan (1990 p207):-

"Creativity has generally been studied in arenas where the product is public ... a work of art, a scientific theory ... Often the assessment of creativity rests upon an evaluation of these kinds of products, as though the creativity lay in the THING rather than in the process that produced it."

Other theorists might equally substitute 'person' for 'process' in the last line, to demonstrate their point of view, and this represents the fundamental schism in the study of creativity, that researchers cannot agree as to which aspect of a person contains or generates the creativity. They argue their individual theories rather than look for the positive aspects of alternative ideas so as to build a compromise 'unified' theory.

Just as the mainstream of scientific thought is abandoning its reductionist paradigm, psychology seems determined to take it up. For most researchers, creativity resides within whatever definition they choose for the moment to assign to it. But person, process and product are inter-related and inter-dependent, and whereas it is a quite legitimate research policy to isolate one aspect and study in great depth, it is a fundamental flaw to conclude that this aspect is actually divorced from the unity of

creativity.

In the last 50 or so years there has been a vast explosion of creative expression, and thousands of 'things' now carry the label of creative, from a child's first scribble to the design of a whole new city, from a screen print of a soup can to the thought of a minimalist poet. There now appears to be no limit to the type or form the creative act can take, which makes the establishment of any consistent criteria extraordinarily complex. Historically there have been few opportunities for 'the man in the street' to indulge in creative thinking. With the exception of a few often quoted examples, creative thinking has usually been discouraged, frequently by death. But today millions of people worldwide are encouraged to be creative, making the identification of creativity even more complex.

### **3.32 Criteria: Definitions of Creative Products**

The identification of a creative person, process or product first requires a criterion which establishes the worth of the object of study. Shapiro (1968) summarised this crucial aspect:

"Without establishing objective criteria, all endeavours at devising predictors, investigating personality and cognitive characteristics, and venturing hypotheses about the creative process, are of questionable value."

Numerous writers have shown considerable agreement concerning the characteristics ascribed to creative products, and there is complete agreement that no single criterion is sufficient in itself. Voss and Means in their survey of 1990 (p400) listed 'novelty', 'usefulness', and 'harmony/elegance' as the most frequently mentioned criteria. This apparent simplicity contrasts with the theories of E. P. Torrance, probably the most consistent worker in the field of creativity, who diversified the descriptions of the creative product:

"In addition to divergent thinking qualities, ... (fluency, flexibility, originality, elaboration) ... we talk about such qualities as humour, fantasy, colourfulness and richness of imagery, unusual visualisation, boundary pushing movement, articulateness ... and the like." (1988 p43)

A chronology of the thinking on this issue would include the following criteria of a creative product:-

- Carl Rogers (1954): - a novel relational product.
- Frank Barron (1955): - novel and appropriate or useful.
- (1988): - fresh, novel, unusual, ingenious, clever and apt.
- Jerome Bruner (1962): - effective surprise/shock of recognition that the idea is correct.
- Arthur Koestler (1964): - novel, original, adaptive to reality.
- Morris Stein (1975): - useful, tenable, satisfying at a given time.
- Beth Hennessey (1988): - a novel and valuable response to an open ended task.
- John Hayes (1981): - valuable or interesting and in some way original or surprising.
- D. Perkins (1981): - statistically unusual, and adjudged to be of high quality.
- Teresa Amabile (1982): - a product is creative to the extent that expert observers agree it is creative.
- A. S. Reber (1985): - solutions, ideas, theories, artistic forms, that are unique and novel.
- Philip Johnson-Laird (1988):
  - 1 novel for person who creates them
  - 2 are non-deterministic, freedom of choice
  - 3 a choice made from specified criteria.
- Dean K. Simonton (1988):- simultaneously original and adaptive.
- Calvin Taylor (1988): - the products of creativity can include behaviours, performances, ideas, and things; with any or all channels and types of expressions.
- Bonnie Armbruster (1990): - the rendering of new forms into a shareable product.
- Suzanne Benack (1990): - novel, atypical, unusual, and effective, useful, appropriate, valuable.
- Thomas Dowd (1990): - making something new.
- Dennis Hocevar (1990): - phenomena that society typically labels creative.
- Colin Martindale (1990): - all creative products are old ideas or elements combined in new ways.

Tardif and Sternberg in their 1988 survey of contemporary research into creativity concluded that certain generalisations can be made about products that are judged to be creative across different domains:

- |                      |   |   |
|----------------------|---|---|
| "Creative products:- | 1 | are novel   |
|                      | 2 | cause changes in the human environment            |
|                      | 3 | involve unusual sensory images or transformations |
|                      | 4 | are useful to society                             |
|                      | 5 | show sensitivity to gaps in existing knowledge    |
|                      | 6 | are surprising                                    |
|                      | 7 | are correct                                       |
|                      | 8 | involve coherent syntheses."                      |

Implicit in this conclusion is the theory that these elements are the universal criteria of creative products. But there are problems inherent with the very process of classification of objects and the imposition of criteria or labels. How many legs can be broken off a tripod, before it ceases to be a tripod? How many legs can be broken off a centipede before it ceases to be a centipede?

Even the terminology used in the actual definitions is vague and open to interpretation; each adjective needs its own definition. What exactly is 'correct' or 'surprising' and to whom? There are many who would argue that one major result of creative physics, nuclear fission, is positively detrimental to society. And the ultimate 'Creativity Man', Leonardo da Vinci, earned the bulk of his reputation as an inventor of weapons of mass destruction, though perhaps they were useful to his society because they only killed the enemy.

### **3.33 Quantitative and Qualitative Aspects**

A further example of this type of problem is the fact that the Tardif and Sternberg summary reads like a description of a Cole Porter song, and he wrote hundreds; does this make Porter 100 times more creative than someone like Einstein who has only a few creative ideas; or less creative than Irving Berlin who wrote thousands? The very idea of COMPARATIVE creativity is really just a red herring, and the ranking of creative ideas is just a non-academic exercise, as useful as the Top Twenty, the Oscar ceremony, or league tables for schools. Is someone more creative simply because they produce more ideas?

Whereas everyone accepts that there are 'levels' of creativity, they are more 'families' than discrete plateaux. Even within the families, comparisons are dangerous; and are they of any relevance? Unless one compares like with like the exercise is pointless and the conclusions misleading. Within the field of creativity the overlap of quantitative and qualitative aspects is not just an infringement of boundaries, for what criteria can measure the difference between a scientist who produces one great theory in a lifetime, and a comedy writer who produces a stream of ideas, eight hours a day, when both of

these people fit all eight criteria listed above ? And even if we could measure this difference, what would it mean? Creativity is essentially a QUALITATIVE construct, and as such has more in common with concepts like 'honesty'; which makes the problem of discrimination even more difficult. Anyone can conclude that Mother Theresa and George Washington are 'more' honest than say Robert Maxwell, but how could one generalise about Mr Smith and Mrs Jones? The attempts to quantify concepts like creativity look increasingly like the devices of a cartload of researchers pulling a horse. Treffinger et al (1971) phrased this problem in more scholarly terms when they pointed out that the problems of most researchers in measuring the quantitative rather than the qualitative dimensions of creative products:

"... a simple numerical count of frequency of responses to reflect a construct of originality, could overlook the occurrence of two or three highly significant responses ... that qualitatively would be worth a hundred fairly mundane responses.

Thus, the individual with the low quantitative score could be unfairly penalised in .. what would be judged truly original behaviour."

The identification and measurement of relative amounts of creativity are associated with on the basic idea that if we can achieve this analysis, then we can formulate training programmes that will educate and improve the creativity levels of everyone. This idea presupposes that:-

- 1      There is a continuum of creativity in which everyone has a place.
- 2      Creativity is a cognitive skill which can be developed.
- 3      The necessary motivational and environmental aspects can be provided.

In support of these views, creativity can be defined so as to fit the description of a continuum, there are cognitive aspects of creativity which can be improved by training, and certainly some motivation can be provided externally.

There is abundant evidence to show that all these aspects can be achieved, but only to a certain level. Higher levels of creativity are not improved by any amount of training, and are rarely explained even by their proprietors, who appear to have only the vaguest ideas about their own creative process. Self-descriptions range from unconscious revelations to 99% perspiration.



### 3.34 The Product as a Creativity Test Score

The real issues here are, by identifying a creative product, can we establish how it was produced; then once we know how, can we train others?

The procedure adopted by most researchers is to lay down criteria and then find the products that best fit. Unfortunately, this process opens up further problems which really need answers, but rarely get them.

- 1 Are the criteria universal or domain specific?
- 2 Does a single product have to meet all criteria?
- 3 Do the criteria have a rank order of importance?
- 4 Does the outstanding level of one criterium overcome any lack of others?
- 5 Is a product more creative just because it meets more criteria?
- 6 How much of the production process is the creative element?
- 7 At what level of creativity is the work?
- 8 How important is the volume of work produced?

Hocevar and Batchelor (1990) conducted a comprehensive review and critique of the psychometric issues in the assessment of creativity. They listed 10 categories, and then evaluated these systems in terms of their reliability, discriminant validity, dimensions, and construct validity. The categories were made up of:-

- 4 items of biographic/personality
- 4 items of externally nominated assessment

and only 2 items of actual product assessment. (Tests of Divergent Thinking, and Judgements of Products.) They concluded that the best method of identifying creative individuals was by "Self reported creative achievement".

The dangers of this procedure were illustrated by R. T. Brown (1990):

"By their nature, self-reports ... are not open to empirical verification. Individuals tend to report what they think is relevant and can only report what they remember. Such data are open to alternative interpretations ... we err in treating them as scientific data themselves."

Typically, the products of creative achievement are ideas, theories or physical objects, inventions, art objects like paintings, poetry, performance, or music. Yet the most frequently studied products of creativity are the results of tests purporting to measure

creativity. So far there is little evidence to show that the high scorers on these tests carry any of this apparent creativity over into the real world. Of course, there are many possible reasons for this, not least the old Agatha Christie murder theory; motive, means and opportunity. Nevertheless, there must be questions asked about the reliability and validity of these tests. Wolf (1982) identified three of the most important aspects:

- 1 Does it measure what it is supposed to?
- 2 What does the score mean?
- 3 How does this score relate to other measures of the same individual?

Fiske (1987) introduced the idea of the importance of 'protocol' into the methods of creativity testing, raising further questions about the conditions under which a study is conducted, and the possible influence of the test format and conditions on the outcome, including:-

- 1 Structured or unstructured situation?
- 2 Restricted or open-ended questions?
- 3 Minimum amount of information required?
- 4 How important is the time allowed?

These Creativity Tests were originally devised as measures of creative ability and predictors of future creative behaviour. The leader of research in this field has been E. Paul Torrance of the University of Georgia,

"My argument for testing as a legitimate way of learning about the nature of creativity is based on the fact that test behaviour does have analogies in learning behaviour and real life."(1988)

Yet Torrance goes on to admit that,

"My efforts to assess creativity have been limited to the rational thinking view of creative behaviour."

While acknowledging that there is a whole 'supra-rational' province of creativity, "outside the province of reason", which he identifies as "miracles, empathy, charisma, supra-logical and foresight", there is a duality through all of Torrance's writing. He offers pages of psychometric analysis (mainly correlation coefficients), interspersed with cartoon drawings and analogical homilies like, "Creativity is singing in your own key", and

"Creativity is shaking hands with tomorrow". Torrance saw the rational and mystical aspects of creativity as separate elements, and concentrated his efforts on the rational, expressing the hope that other researchers would take up the challenge of the mystical. He devised a battery of tests which were frequently administered between 1959 and 1987, modestly called TTCT (Torrance Tests of Creative Thinking). Based on the results of his tests on school children, and with the support of other studies, he concluded that high scorers on creativity tests become creative adults. While this is hardly an earth-shattering conclusion, it should be remembered that the principal aim of these studies was the validation of the tests rather than making new discoveries about the creative mind.

### 3.35 Assessment and Evaluation

Creativity Tests are essentially problem solving exercises, and they were founded on two elements:

1. The creativity factors first identified by J. P. Guilford:-
  - Fluency . . . . .quantity of responses
  - Flexibility . . . . . shift in idea from one class to another
  - Originality . . . . . statistical infrequency of response
  - Elaboration . . . . .unusual uses.

These factors were the basis for the scoring of the tests, and acted as predictors of:

- 2 The adult creative achievements, based on five criteria selected by Torrance:-
  - 1 Quantity of acknowledged creative achievements
  - 2 Quality of their 3 most creative achievements
  - 3 Quality of future ambitions/career image
  - 4 Quantity of achievements at High School
  - 5 Quantity of creative 'style of life' achievements.

With the benefit of 20/20 hindsight there is an almost frightening naivety in the belief that this volume of diverse and assorted information could be related and then translated by independent judges into any form of meaningful score. However, these and related studies have produced a vast amount of statistically significant correlation coefficients. Evidence from the administration of these tests did show some of the items highlighted

- by Fiske (1987);
- increased time for incubation increased originality
  - a 'cue-rich' environment helped high creatives
  - some stress is helpful in creative production

The tests also highlighted 18 cognitive skills which Torrance claimed "proved to be valid predictors of creative achievement".

This claim was contradicted by R.T. Brown in his 1990 survey of Testing for Creativity, who found that there was:-

"... little evidence that the creativity tests actually measured creative production."  
"... most tests were not internally consistent, and none reliably predicted actual creativity. The basic problem seems to be that creativity tests had only APPARENT construct validity, and certainly not criterion validity."

Brown concluded with the observation that:-

"Intercorrelations among the same creativity tests ... vary widely from study to study."

Further criticism of the 'Creativity Test' was identified by Feldman (1980), as the narrowness of the products actually studied and the difficulty of actually specifying which features of the product can be labelled as creative.

However, one of the most remarkable features in the assessment of creativity is the reliability of 'inter-judge' ratings. Even without the establishment of formal criteria or even a specific definition, a consistent level of agreement can be maintained. Barron (1965), Simon (1967), Nicholls (1972), all support this point, and Hennesey and Amabile (1988) concluded:-

"If appropriate judges independently agree that a given product is highly creative, then it can and must be accepted as such ... By definition, interjudge reliability in this method is equivalent to construct validity."

Hennesey and Amabile laid down what they described as the necessary procedure for good consensual assessment. The task:-

1. must be appropriate, and lead to a product
2. must be open-ended
3. should not depend on special skills, ie verbal or drawing ability

and the judges should all:-

1. have appropriate experience
2. assess independently
3. look at other dimensions (for possible influences)
4. rate relatively, not to some criterion norm
5. rate the products in a random order.

However, opinion on this point is not universal; Michael and Wright (1990) highlighted the danger of subjectivity in scoring:

"Judges ... often have great difficulty in reaching a consensus regarding what is truly creative or original response ..."

They also raised the issue of the comparative creativity of the judges:-

"Although ... psychometric devices may facilitate improved degrees of objectivity, the overall process is likely to remain open to the idiosyncrasies and preferences of the evaluator, who may not be too creative himself ..."

Perhaps this issue is best summed up by what Perkins (1981) described as the 'central paradox of creativity': that if people have the knowledge to judge the products of a creative process, then they ought to be able to use it to generate their own creations.

Johnson-Laird (1988) offered an explanation of the paradox:

"... the explicit knowledge that is consciously accessible to the critic is by no means sufficient for the generation of ideas."

The answer may be even simpler. Creative products come in many sensory forms, visual, aural, tactile, but they are always explained or criticised verbally. Possession of the verbal ability to be a judge or critic, is no indicator of the musical, visual or motor skills necessary for creative production. Equally, lack of these non-verbal abilities should not preclude one from becoming a judge.

### **3.36 Levels of Creativity**

Another persistent problem in the assessment of any form of creativity is "level". How does one isolate and measure the creative dimension of a particular product? How creative is this product?

- Method A - produce a list of criteria and see how many the product meets
- Method B - select one particular criterion and see how much of it this product has
- Method C - compare the product with an accepted "norm"
- Method D - combine methods A, B and C.

Any of these methods in an investigation of creativity will yield some information about the value of a particular product. however, they must be framed within a structure which takes into account the level of creativity under study. There are still problems relating products like test scores, which have a built-in equivalence; more difficulties arise when measuring finite objects like poems or drawings; and these are compounded when the products are amorphous like 'life-skills', or are drawn from different domains, or belong to differing levels.

The issue of 'levels' of creativity appears to be one of tacit acceptance rather than rigorous scholarship. Many authors phrase their creativity as some continuum, rising from primitive or early efforts to the highest achievements of science and the arts. We all have some of it, some of us have more. Other authors claim to be able to differentiate discrete levels of creativity. The surprising thing is that neither school of thought seeks to challenge the other. Perhaps they are both looking at a series of steps, one group sees only the steps, the other only the slope.

The idea of creativity as a dimension of intelligence owes its origins to the work of Guilford et al, who identified creativity as Divergent Thinking, a continuous dimension present to varying degrees in all people. Prior to this, there had been a dichotomy between the genius and the rest; only a few workers considered that it was possible to be a little bit creative.

The theory that there were discrete levels of creativity upon which we could be placed according to our ability, was first framed by C.W. Taylor in 1959, and as been adopted without much criticism ever since. Taylor identified 5 levels of creativity:-

1. Expressive :- as in the drawings of children
2. Productive :- derived from restrictions and controlled free play
3. Inventive :- ingenuity with materials and techniques

4. Innovative :- improvement through modification
5. Emergentive :- develop an entirely new principle.

The Taylor theory demands the concept of a continuous dimension of creativity, and also that on this continuum people of differing abilities may be grouped together and given labels. However, these labels should be descriptive of the level or classification of the group. The Taylor diagnosis is an example par excellence of the 'Creativity Syndrome'. Taylor is comfortable with the polarities of ability, as in a normal distribution, but has great difficulty with the majority of cases which fall in between. If these levels are intended to be progressive, then there is little difference between items 2, 3 and 4; and Invention and Innovation are interchangeable as concepts depending on how they are defined, and Taylor's definitions are interchangeable.

Any division of a continuum is bound to be arbitrary and debatable depending on the point of view of the reader, and the criteria of group descriptions. Creativity can only be divided on the basis of levels of ability within a particular domain, not across domain. It is possible to rate scorers on creativity tests according to their results, and grade them, say low, medium or high. (A).

It is also possible to judge musical compositions (or poetry) for aspects of creativity and grade on a similar scale. (B).

But is it possible that a high on test A is equivalent to a high on test B?

Is there in fact anything that the two lists have in common apart from the labels?

One can apply 'Taylor' type levels to any domain, but the measure must remain within the domain.

### **3.37 Domains: Comparisons of Scientific and Artistic Products**

One central issue which divides researchers in the field of creativity is whether creativity is a universal attribute or is only active within a particular domain.

Why are there so few individuals who are outstanding in more than one domain? Where are the Renaissance men, like Nicholas of Cusa (1401 - 64) who proposed planetary

motion before Copernicus, blood circulation before Harvey, the reformation of the Church before Luther, and the function of art as 'creative' before anyone? The rarity of even dual creativity in more recent times has lead the majority of researchers to believe that creativity is a domain specific trait. R. T. Brown (1990),

"... people appear not to be more or less creative generally, but more or less creative in relatively narrow areas".

This lack of dual achievement is virtually the only evidence for creativity as domain specific. There is abundant evidence that ability is a domain specific trait, and certain cognitive abilities are certainly domain specific eg verbal, spatial, and numeracy. But for creativity to be considered domain specific, we must identify and isolate it, and so far no-one has. Poets, inventors, musicians, and artists, may all have differing cognitive abilities and styles, and may only have their creativity in common.

There are so many individual domains in which creativity operates that it is beyond the scope of this review to study them all, except to compare them in the general form of the two areas which divide our culture, science and the arts.

H. J. Wallberg (1969) offered a convenient if simplistic distinction between creativity in science and the arts:

"... the scientists seemed preoccupied with things and ideas rather than people and feelings".

"But the differences found here imply that communicated inner feeling is the essential preoccupation of the artist (Beauty), whereas single-minded conceptual grappling with external realities is the sine qua non of science (Truth)".

If one subscribes to the John Keats theory that "Truth is Beauty" and "Beauty is Truth", it would seem that science and the arts are not really far apart. Wallberg manages to be both right and wrong in the same sentence. In simple terms, science could be described as the objective analysis of external things, and art as the subjective communication of internal feelings, but they are both concerned with beauty and truth. Whenever scientists like Wallberg use the words art and beauty together, the inescapable conclusion is that they mean beauty as some idealised, abstract fantasy; whereas an artist would describe



beauty in more 'Keatsian' terms, as integrity of expression, or rightness; closer to the aims of science. So in this context, beauty and truth are only different labels for the same thing. G. H. Hardy (1941), claimed that "Beauty is the first test, there is no permanent place in the world for ugly mathematics."

At its most basic level the issue under discussion is whether creativity in science is conceptually or qualitatively different from creativity in the arts. If we look at science within the context of the three Ps; product, process and personality, certain aspects are fairly clear. Products of creative science range from massive physical objects, engineering or environmental projects, through mechanical inventions, down to particle physics and the purest abstractions of mathematics, all within the paradigm of 'problem solving'. Products in the arts tend to be neither so large or so small, all on a human scale, and all within the paradigm of communication of ideas, although there is a degree of overlap, as artists solve problems and scientists communicate. If creativity is domain specific, then the products of science should differ from the products of the arts, not just in their forms but in their creativity.

The three main criteria of creative products; novelty, usefulness, and harmony, seem equally applicable to the products of science and art, so we would find it very difficult to discriminate levels of creativity.

The personality of the scientist/artist involved in creative work has been the subject of many studies, from Cox (1926) to Martindale (1990); and aside from generalisations like scientists tend to be more objective whilst artists tend to be subjective, the only firm evidence lies in the area of divergent thinking. Guilford first identified 'creativity' as being divergent thinking, and Hudson (1966) identified artists as being more divergent than scientists. Setting aside possible distortion of the results by the fact that the percentage of artists who are divergent thinkers is likely to be considerably higher than the percentage of divergents in a population of scientists, simply because the arts actively encourage divergency; we are left with the conclusion that in general terms even divergent thinking cannot be considered a domain specific trait. The situation with regard

to personality is further complicated by the variety of characteristics that often exists within a domain. Several authors have pointed out the similarity in character and behaviour between some scientists and artists. Drevdahl and Cattell (1958) reported their studies of 98 research scientists (1955), and 153 imaginative writers (1958); and concluded that a comparison of the two groups on their "16 Personality Factor Scale" showed that the profiles of the writers:-

"... by any pattern similarity coefficient (an index designed to express overall similarity between two profiles), would definitely be placed in the same family as the profiles for the scientists; and the same is true of artists, taken from persons listed in "Who's Who in American Art"."

And within a domain there are many differences in the personality of individuals with the same levels of ability; for example the Spanish painters Velasquez, Goya and Picasso; and the Dutch painters Rubens, Rembrandt and van Gogh. Even amongst contemporaries who shared ideas and common aims, like Cezanne, Gauguin and Renoir, there existed striking differences in personality.

The third item, the creative process, is at the very heart of the 'domain' problem; for if there is a difference between scientific and artistic creativity then the thinking processes must differ. Obviously the products of science and the arts differ, as do the people, but there is little evidence that they differ in their creativity.

For creativity to be domain specific, the cognitive processes must differ within the domains. The popular historical view is that creative science throws itself out of the bathwater with a loud "eureka"; whilst the artist listens to his muse. Current theories list both artistic and scientific creativity within the paradigm of analytical, incremental, problem solving, eg Weisberg (1986) :-

"... the production of a scientific theory or an invention usually is a "solution" to some "problem".  
... artistic creativity can also be looked on as problem solving." p140.

In order to prove their problem solving theories, researchers like Weisberg have to consider artistic and scientific creativity as evolving through the same process. They cannot debunk scientific insight and leave artists with their muses, so they label the arts as

mere problem-solving. Other workers, like Sternberg and Davidson (1986), and Langley and Jones (1990), have kept the concept of insight and looked for cognitive and even computational explanations; pointing towards some form of what Armbruster (1990) has called 'metacognition'.

The study of artistic creativity is bedevilled by a paradox. Scientists raised in a reductionist paradigm, expect and are comfortable with the objective analysis of their thought processes. Artists are brought up in the genius paradigm, and they expect the unexpected, unexplained, mystical elements of themselves and their work. They are as mistrustful of the scientist's analysis as the scientist is of their intuition. They must all come to terms with the fact that there is both intuition and analysis in all the sciences and all the arts.

### **3.4 THE CREATIVE PERSON**

#### **3.41 Genius, Psychosis and Control**

The study of creativity normally begins with the identification of creative products, and the next step is usually the analysis of the people who produced these wonders.

Historically, these people were labelled 'genius', and thereby excused any psychological scrutiny. The current 'problem-solving' paradigm of creativity research which owed its impetus to J. P. Guilford, changed this laissez-faire attitude considerably, but research still has not quite thrown off the myth of the genius. The reason for this situation is quite simple; in today's pluralist society change and creativity abound, and any evaluation is drowned in a sea of criteria and critical opinions. Whereas historically, we have no such problems, scholars may argue over the comparative merits of Titian and Raphael, or Mozart and Beethoven, but no-one would dispute their genius label.

Genius is an accolade that society bestows upon people in response to their work, and though there are aspects of genius that are universal, there are other aspects that are subject to the vagaries of social conventions. Many current holders of the office of genius were not judged to be 'great' within their lifetime: J. S. Bach was known primarily as an

organist, and his compositions were ignored for over 75 years: Galileo and Copernicus made creative discoveries which in their day were considered as blasphemous and wicked: Van Gogh hardly sold a painting in his lifetime: and Rembrandt died in poverty. Conversely, some achieve international status on quite dubious evidence, Friedenthal (1963 p157), quotes letters from Peter Paul Rubens offering 'his' paintings for sale,

"A Last Judgement. Begun by one of my pupils ... Since this picture is not yet finished, I would retouch it by my own hand in its entirety, and thereby it might pass for an original."

"Leopards. ... Original by my hand, except the very beautiful landscape."

"Achilles. ... painted by my best pupil, and entirely retouched by my own hand."

A further complication to the study of the creative genius is supplied by the association of genius and psychosis. This relationship was noted as early as Aristotle (c. 360 BC), in his "Problematica":- "Those who have become eminent in philosophy, politics, poetry, and the arts, have all had tendencies toward melancholia". Literature is replete with anecdotal and clinical descriptions of the pathological behaviour of the 'gifted'.

Gibson (1889) described Shelley as "perhaps the grandest metaphysical poet, ... and one of the best classical scholars ... Nevertheless, his life was a failure in almost every particular ..."

George Sand wrote that Chopin was, "... shutting himself in his room for whole days, weeping, walking, breaking his pens..."

Lombroso (1910) stated that, "Anyone who has had the rare fortune to live with men of genius is soon struck by the facility with which they misinterpret the acts of others, believe themselves persecuted, and find everywhere, profound and infinite reasons for grief and melancholy."

Shields (1973) labelled both Constable and Turner as "manic depressives", and other authors have variously listed Beethoven, Coleridge, Handel, Kafka, Michelangelo, Mozart, Newton, Raphael, Rossini, Schopenhauer, Schiller, Schumann, Strindberg, Swift and Van Gogh as psychotic. Some artists even point the finger themselves, for example, John Dryden (1681):

"Great wits are sure to madness near allied,  
And thin partitions do their bounds divide."

Claridge (1972) commented that the personality traits of creative people are similar to the profile associated with schizophrenia, and theorised that such individuals have a predisposition to psychosis. The significant element in this equation was explained by Robert Prentky (1990),

"There is a marked resemblance between the cognitive styles characterising creative thought ... and the psychotic loosening of ideational boundaries ... The apparent difference between the divergent thinking, loose associations, and irrelevant themes of psychotics, and the amazing conceptual leaps, cognitive flexibility, and discoveries of creative artists is one of CONTROL."

This is a more academic assessment of the issue than the earlier Dykes and McGhie (1976) theory, that creative individuals possessed a cognitive flexibility that "permitted effective processing of stimulus overload, without blowing a fuse".

Cattell and Butcher (1968), point out that in the issue of mental disturbance, creative scientists and artists diverge more markedly. Their research showed that among scientists, anxiety and excitability appeared common, but neurosis was rare, whereas neurotic tendencies among artists were frequently reported. Though they added the rider that, "a gram or two of scientific research would be welcome in contrast to the mountains of romantic speculation".

### **3.42 Self Reporting: Eureka v Accretion**

The leading opponent of the concept of the creative genius, ie someone who possesses "some indefinable quality which accounts for the great things they do", is Robert Weisberg (1986 p88), who claims that, "It is a mistake to look for genius in an individual" and outlines his theory of creativity as somewhere between the genius and the associationist viewpoints. Weisberg selects several individuals as being geniuses but does not accept their self-reports of their creative thinking process. He supplies a different interpretation of these reports and uses his analysis of their work to prove their errors and his theory. This technique invites the mixing of a few metaphors: he wants to keep his cake after having thrown it out with the bath water.

The genius concept is supported by the long-held theory that new ideas occur by leaps of insight and is disputed by Weisberg on the grounds that;

"First, such leaps are difficult, if not impossible, to demonstrate under controlled conditions. Second, many of the reports on which the unconscious theory is based are of questionable accuracy."(p33)

He then cites the subjective reports of Mozart, Coleridge, and Poincaré as the most frequently quoted examples of the inspirational insight of unconscious thought process, the 'Eureka!' or 'Aha!' view of creativity; and quotes evidence to show that as these men did not produce whole works at one sitting as described by their biographers, the 'insight' view of creativity is invalid.

A response to this is to point out that the actual volume of work produced is never an issue in the study of creativity, and so if Mozart produced one chord, Coleridge one word, and Poincaré one formula by incubation and insight, then the 'Aha' theory would hold. The subjective and anecdotal evidence for these 'insight' solutions is massive and incontrovertible, but whereas many problems can and often are solved by this means, this does not preclude any other creative system. Not only is there more than one way to a creative product, but the same artist may use different methods at different times, eg William Blake (1757-1827), who reworked his poem 'The Tyger' more than twenty times, yet wrote 'Milton':

"... from immediate dictation, twelve or sometimes twenty or thirty lines at a time without premeditation, and even against my will."

Weisberg proposed the 'incremental' nature of creative thinking, 'innovation occurs in a series of small steps rather than a great leap", which is a paraphrase of the Thorndike (1911) theory of learning, that it is "incremental rather than insightful". Weisberg concluded that "people create solutions to new problems by starting with what they know and later modifying it to meet the specific problem at hand". Suppose Weisberg's increments and modifications were the result of insight; where would that leave his theory?

The Eureka versus Accretion debate was also addressed in more detail by Clement

(1990), who conducted experiments on "thinking aloud" problem solving. He concluded that rather than being eureka OR accretion, the pace of creative thinking is uneven, with 'more revolutionary' and 'less revolutionary' periods of work; and he classified the creative result as a 'scientific insight',

"Insight processes were found that were not accretionist in character ... On the other hand, ... these processes do not appear to be supernormal or unconscious".

Clement divides insight and eureka by claiming that the 'eureka' event is the result of 'unconscious' thought processes. This is an unnecessary condition, and more appropriate differentiation in this context would be on the basis of the scale or level of creativity. The examples of 'eureka events' given by Clement himself were of major scientific breakthroughs (Galileo, Darwin, Faraday, Einstein), and it is perhaps unrealistic to expect this level of results from laboratory experiments with undergraduate scientists.

However, Davidson and Sternberg (1984) did conduct a series of studies on the insight process, which they described as being three separate cognitive processes being performed in novel ways:-

- sorting out relevant information
- putting together unrelated elements
- relating new to existing knowledge.

### **3.43 Twentieth Century Artists**

Another element in the Weisberg theory of creativity is the unification of science and the arts. "The thought processes involved when scientists solve problems are precisely the same as those of the creative artist." (p141)

The art examples he uses to illustrate his incremental problem-solving theory, Picasso and Alexander Calder, he first labels as 'aha' and then proves that their work is based on small innovations of past experience, "the initial product evolves into something new ... firmly grounded in earlier work". Whereas it is readily acceptable that all art evolves through reaction to earlier work, these two artists were simply wrongly labelled 'aha' in the first

place. Weisberg's error is in mistaking stylistic changes for creativity. Within any 'ism' or school of painting there are a group of artists working in a common style or theory. Is there then no individual creativity? Is iconoclasm the only criterion for creativity in art? Weisberg's theory runs into the same problems with other artists. The most obvious choice to illustrate his idea would have been the abstract artists Mondrian, Malevitch and Kandinsky, who were all transformed from naturalistic painters into geometricians by small incremental steps. However, the creative aspects of their work lay not in these superficial transformations, but in their subsequent handling of the pictorial elements, primary geometric forms.

There is a frequent assumption by many writers on the creative arts that the entire work is creative. Rarely is any attempt made to isolate the particular creative element(s) within a work which demonstrate innovation and originality.

This issue was raised by Csikszentmihalyi (1988), "... how much of a work of art is actually creative?" Drawing on his personal responses to Renaissance art, he remembers their serenity, their power and excitement, but could never see their creativity. Most of the 'work' in the arts is incremental in nature, and it is to Csikszentmihalyi's great credit that he, unlike Weisberg, demonstrates the need to differentiate the creative aspects from the bulk of the work. However, though he acknowledges this crucial point, Csikszentmihalyi is himself unable to identify the creative aspects of a work, resorting to the claim that as the attribution of creativity is by social agreement:

"... it also follows that social agreement is one of the constitutive aspects of creativity, without which the phenomenon would not exist."

Then having taken this dangerous step into the quagmire of social evaluation, he supports his thesis by citing John Ruskin's appreciation of the previously denigrated Botticelli, as if it was Ruskin who put the creativity into Botticelli. Ruskin offered similar support to the landscape painter J. M. W. Turner from 1835 to 1851, and was instrumental in the acceptance of 'landscape' as an art form, but it is still difficult to accept that appreciation increases 'actual' rather than 'apparent' creativity.



### 3.44 Surveys of Creative Personality Characteristics

If there is, as Weisberg and others believe, one single process, a Holy Grail of creative thinking, is there then a creative man, a single personality 'type', controlling or controlled by his great cognitive skill? If the search for a unifying theory of the creative process was difficult, there are many more problems in the search for 'Creativity Man'.

Allport and Odbert, in their research at Harvard, listed over 3,000 trait words for describing personality. So what are the characteristics of the creative personality? Early attempts at the identification of the creative individual came from study of the characters of acknowledged creative people. These findings have been reported by a number of authors, including Galton (1870), Cox (1926), Havelock Ellis (1944), Roe (1951/3), Ghiselin (1952), Barron (1955), Cattell and Drevdahl (1958), Taylor (1960), and MacKinnon (1960). In general their conclusions were that in comparison with the general population, 'creatives' were found to be more:

- sceptical
- extroverted
- radical
- self sufficient
- unconventional
- imaginative
- absent-minded
- emotionally sensitive.

These characteristics were further identified by Cattell and Butcher (1968) as:

- schizothene hardness (sceptical, withdrawn)
- high intelligence (not exceptional)
- stability
- dominance
- desyrgent taciturnity (introspective)
- high self sufficiency.

In addition to the biographical studies of eminent people, the personality correlates have been assessed empirically by the answers to personality questionnaires and tests, and the findings of both methods are similar.

Based on a survey of earlier studies of self descriptions from adjective checklists,

Harrington (1975) developed a Composite Creative Personality Scale. The adjectives he found that creative people most frequently used to describe themselves were:-

active	alert	ambitious	anxious
argumentative	artistic	assertive	capable
clear thinker	clever	complicated	confident
cynical	demanding	egotistical	energetic
enthusiastic	hurried	idealistic	imaginative
impulsive	independent	individualist	ingenious
insightful	intelligent	interests wide	inventive
original	practical	quick	rebellious
reflective	resourceful	self confident	sensitive
sharp witted	spontaneous	versatile.	

He then added that creative people were not especially consistent in their traits.

After surveying 1700 subjects, Gough (1979) produced a 30 item Creative Personality Scale, which listed 18 positive and 12 negative descriptions.

Positive:	capable	clever	confident
	egotistical	humorous	individualistic
	informal	insightful	intelligent
	wide interests	inventive	original
	reflective	resourceful	self-confident
	sexy	snobbish	unconventional
Negative:	affected	cautious	commonplace
	conservative	conventional	dissatisfied
	honest	mannerly	narrow interests
	sincere	submissive	suspicious

Gough also claimed that this scale correlated positively and significantly with six measures of creativity and criterion evaluation.

Analysis of the comparative commonality of the Harrington, Gough, and Cattell lists showed that only four words, or their equivalent, occurred on every list:-

Intelligent  
 Reflective (introspective)  
 Unconventional  
 Individual (self-sufficient, free spirit).

Four more words occur on two of the lists:-

Imaginative      Original      Wide Interests      Insightful (intuitive).

There are clearly some problems with the selection of words for these inventories:-

- a. duplication of words within a list, eg.:-
  - clever/intelligent
  - confident/self-confident
  - ingenious/inventive
  - active/energetic
  - impulsive/spontaneous
- b. inclusion of words that are difficult to relate to creativity, i.e. hurried, snobbish, sexy.
- c. omission of some words which would be expected, eg.:-

fluency/flexibility from the Guilford factors.  
neurotic from all earlier creative self-reports.

In a more recent analysis of adjective checklists Martindale (1990) found that the most striking thing was that many of the traits chosen shared the common factor of disinhibition:-

bitter	dissatisfied	emotional	enthusiastic
gloomy	impulsive	industrious	inventive
irritable	loud	original	pessimistic
unstable.			

Though this gives us some overall picture of a creative person, what does it actually tell us? The words of William Stern serve as a reminder, "The constancy of a trait is merely an ideal", and "always there is in (man's) behaviour a spark of self-development and growth". The root of the problem of personality assessment is that man is always developing and reacting to the external world, and traits are only discovered by inference from the consistency of this interaction. Lazarus (1967), however, points out that even though we can only infer the underlying structure of personality, the individual system is relatively stable. But he reminds us that the system is subject to pressure from genetic, cultural and environmental influences.

For a conceptual definition of 'personality' there are as many choices as there are psychologists working in this field. So, adopted for the purpose of this discussion is the Atkinson et al (1990 pA18) general definition of an individual's 'personality' as "the characteristic patterns of thought, emotion, and behaviour that best illustrate 'personal style' and influence interaction with the environment". Personality assessment seeks to

identify and explain individual differences and group 'types'; and to synthesise all the known data into a description of the whole person. There is no one convenient method for this analysis, and several schools of thought compete for acknowledgement. The five different perspectives in psychology, Biological, Behavioural, Cognitive, Psycho-analytical, and Phenomenological, all have their own theories of personality, and their methods of analysis, usually Experiment, Correlation, or Observation. A further approach was that devised by George Kelly (1905-66), a "Personal Construct Theory" which allowed individuals to construct their own responses to the world and build their own images of themselves.

In order to formalise some consensus of opinion in his area, Tardif and Sternberg (1988) carried out a survey of research into the personality assessment of creative individuals. Included in this survey was the work of most of the leaders in creativity research; Amabile, Barron, Csikzentmihalyi, Davis, Feldman, Gardner, Gruber, Hennesey, Johnson-Laird, Jones, Langley, Perkins, Schank, Simonton, Sternberg, Taylor, Torrance, Walberg, and Weisberg.

Their conclusion was that though there are many differences of opinion, there are major areas of agreement. They categorised descriptions of the creative person into three areas,

- cognitive characteristic
- personality and motivation
- developmental influences.

The cognitive characteristics were further divided into three sets, traits, abilities and processing styles. The consensus opinion of USA psychologists was that there are four traits commonly associated with the creative individual:-

- relatively high intelligence
- originality
- verbal fluency
- good imagination.

The following cognitive abilities were associated with the creative person:-

- metaphoric thinking
- flexibility
- decision making skill

- logical thinking skill
- independence of judgement
- coping with novelty
- to escape perceptual set
- to find order in chaos.

The processing styles most frequently related to creative thinkers were:-

- using wide categories
- using images of wide scope
- using non-verbal communication
- building new structures
- questioning norms
- asking why?
- being alert to novelty
- being aware of gaps in knowledge
- using own knowledge as base for new ideas.

Tardif and Sternberg found no single characteristic present in the personality of all creative individuals, rather a constellation of elements, of which the most common were:-

- willingness to confront hostility
- willingness to take intellectual risks
- perseverance
- curiosity
- openness to experience
- a driving absorption in subject
- commitment to work
- task focussed
- self discipline
- high intrinsic motivation
- freedom of spirit
- rejection of other people's limits
- self organised
- sets own rules
- need for competence
- often reflective/withdrawn/introspective
- have impact on others.

Other aspects listed include:-

- tolerance of ambiguity
- broad range of interests
- tendency to play with ideas
- valuing of originality
- unconventional behaviour

- experience of deep emotions
- intuitive
- seeking interesting situations
- opportunistic
- conflict between self-criticism and self confidence
- paradox of social behaviour - isolated/integrated.

Individual researchers within this survey have identified further elements:-

- lack of 'fit' to their environment
- need to distance from peers
- avoidance of interpersonal contact
- resistance to demands of society
- drive for accomplishment
- need for recognition
- need to form alliances
- are charismatic
- are honest and courageous
- are emotionally expressive
- are ethical
- are empathetic/sensitive to need of others.

The developmental issues which were found to be influential were listed as:-

- being firstborn
- losing parents early in life
- diversified/stimulating home environment
- exposure to range of ideas
- happier with books than people
- omnivorous readers
- liking school
- developing excellent work habits
- learning outside the classroom
- having many hobbies
- forming closely knit peer groups
- having a future career image
- having good role models
- demonstrate voluminous productivity.

In summary of these results, Tardif and Sternberg concluded that there was an underlying theme, the creative individual as one in conflict.

### **3.45 Artists in Conflict : Dialectic / Gender Issues**

This concept of the 'artist in conflict' is merely a reaffirmation of the theories of Prentky et al (qv), and as such is no startling revelation. But it does offer further support to the ideas of Anthony Storr, a psychiatrist with a particular interest in the arts. Storr (1972) believed that this conflict is resolved by being channelled into the creative work, which is a slight variation on the Freudian theory of "The diversion of instinctual energy into work", and he identified the major attribute of the creative individual as the ability to 'tolerate dissonance, tension and anxiety' and remain in control; to hold opposite viewpoints at the same time. Rothenberg (1976 p311), after observing and interviewing several thousand creative people, identified a 'Janusian' thinking process. Naming his theory after the Roman god, Rothenberg claimed that one of the essentials of creativity was the ability to hold two opposing ideas simultaneously, and to acknowledge that both of them can be valid and true. This theory is close to the ideas of the internal 'dialectic' procedure of creatives as demonstrated by Benack, Bassenches, and Swan (1990). They adopted the Bergsonian position that reality is change, and change is creative; and offer their 'dialectic' model of the process of thinking as being the process of creative thinking. Dialectic thinking moves from a given perception to its antithesis or contradiction; so change is natural, expected, and valuable. Differences of opinion exist because no single answer is right and all others wrong. This pluralistic view of reality and epistemology, gives both cognitive and affective support to creativity.

A further theory expressed by Storr, which has its origins in Freud and Jung, and is supported by Roe, Barron, MacKinnon and others, concerns the problem of gender as experienced by creative artists. Historically, the vast percentage of creatives have been men, yet according to Storr et al, creativity is a 'feminine' trait. Repeated tests have shown that male creative subjects make consistently high scores on scales measuring 'femininity'. Storr concluded that, "the more creative a person is, the more he reveals an openness to his own feelings and emotions". Dellas and Gaier (1970 p173) in their review of this literature concluded that "the integration of the necessary 'feminine'

sensitivity and intuition, with 'masculine' purposive action and determination is conducive to creativity". Work in the arts is invariably the result of sensitivity and purposive action, and is produced in equal amounts by both men and women.

An important rider to these ideas is the reminder that the concepts of masculinity and femininity are culturally determined, and everyone is 'bi-sexual' to a degree, and there is little evidence to support the idea that acceptance of 'feminine' aspects of a man's nature is indicative of any homosexual tendency. It is clear that not only is the artist in conflict, but that there is more than one conflict.

### **3.46 Environmental / Situational Influences on Personality**

A further dimension of the problem of identifying the creative person is the influence of the environment, or 'situation' on the character of an individual as expressed through his behaviour. From 1968 Walter Mischel opposed the Trait theory of personality by advocating a 'situational' approach to the study of human behaviour, stressing that changes in the environment produce changes in the responses and behaviour of the individual. Originally this attitude was developed from the study of animals, but with regard to human behaviour in general, the appeal of this theory was that it confirms observation, people do behave differently in different situations; though a weakness is that the same situation does not affect everyone in the same way.

The influence of environment on behaviour was not a new idea even in 1968. Comments on this theme are in the works of Hartshorne and May (1928), Levin and Piaget (1930s), Karl Popper (1947), Hebb (1949), Anastasi (1958), Pervin and Lewis (1958), and in particular K. S. Bowers (1973), who qualified Mischel's theory by claiming that behaviour is not just situational or trait-determined, but the interaction of the two. Mischel himself modified Social Learning Theory in 1973 by the addition of the cognitive aspects of personality,

"The individual approaches each situation in a characteristic cognitive style as a result of past experience and self evaluation."



This theory was further enhanced by Bandura (1978-86), who claimed that we also learn from our observation of others.

Criticism of Social Learning Theory has come in several forms; objections to the ease and frequency of stereotyping; worries about concepts like 'anxiety' and its variation within groups of people in the same situation; low correlations found by Mischel himself (1976), and Rest (1983), between Kohlberg's 'moral' concepts and situations; and the general feeling expressed by Carlson (1971), that over-emphasis on the 'situation' leads to a reduction in the importance of the individual.

The relevance of theories of 'situation' for the study of creativity was noted as early as 1954 by Carl Rogers, who talked of the conditions necessary for creativity, and the importance of setting up situations of 'psychological safety' and 'freedom'. Also Stein and Torrance have persistently argued the importance of situations and cultural factors in creative production. If our definition of personality includes aspects of behaviour, we must concede that no behaviour is possible without environmental interaction. Rogers proposed that creativity is only possible in a positive environment; Wallace (1985) believes that not only is this environment not easy to establish, but it is ever changing and the individual must himself work to produce his own personal environment. Hennessey and Amabile (1988) emphasize that it is the negative aspects of the situation which have most power; and their researches showed the ease with which any poor environment can disrupt creative endeavour.

The problem with emphasising the external influences on creative performance lies with the level of creativity being assessed. Within the classroom or laboratory, external forces can and often do, exert a major influence; but the history of science and the arts is full of examples of wonderful high level work done under extreme physical and mental pressure.

### **3.47 Motivation : Intrinsic / Extrinsic / Self Esteem**

The key to this resistance of external pressure has two sources, a collection of personality traits under the label of 'self-confidence', and a very high degree of motivation. This idea

has the support of Martindale (1990),

"... creative cognition tends to occur only within a certain configuration of personality traits. The most highly creative ... are driven by very high levels of motivational factors, such as interest, curiosity, or ambition."

Hayes (1990) is even more specific'

"The failure of cognitive ability measures, such as IQ, to predict creative performance leads me to propose that creative performance has its origin, not in innate cognitive abilities, but rather in the motivation of the creative person."

"... all the variables that discriminate between creative and non-creative people are motivational ... Over a period of time this motivation has cognitive consequences, such as the acquisition of large bodies of knowledge ... but the origin is in motivation, not cognition."

If motivation is defined as the process that arouses, sustains, and regulates our behaviour, then it also has two basic sources, internal and external. Which of these sources exerts the most influence over creative thinking is another matter of great debate. Recent theories fall firmly into the 'intrinsic' camp. The concept of Intrinsic Motivation goes back as far as Francis Galton who recognised the necessity of an 'inherent stimulus' that 'urges genius to attain and maintain excellence'. Much of more recent research, reviewed by Hennessey and Amabile (1988), seems to support the suggestion that intrinsic rewards are more effective for the promotion of creativity,

"People will be most creative when they are motivated primarily by interest, enjoyment, satisfaction, and the challenge of the work itself. Not only do external rewards dampen creativity, but that even thinking about extrinsic reasons for being creative lowers their actual creativity."

However, intrinsic motivation itself remains a somewhat amorphous concept, like many ideas in psychology the meaning of the term can vary with the research team using it. Definitions fall within three different but not mutually exclusive fields; underlying actions towards self-chosen goals, or instinctually intellectual needs to master the environment, or 'doing something for its own sake' (Allport's 'functional autonomy'). Ochse (1990), in his review of the motivational aspects of creativity, disregards the 'inherent' element and lumps all motivation under the umbrella of "persistent, enthusiastic devotion to work", concluding that "... the major determinant of creative achievement is

motivation". He supports this view with references from Roe, Cattell, Barron et al, and even drew the title of his book from an ancient Greek proverb, "'Before the Gates of Excellence' the high Gods have placed sweat".

This is too simplistic a conclusion, bearing in mind Thomas Edison's comment about 99% perspiration, the 1% inspiration remains the most important element. Without it, even 1 million percent perspiration will dig a lot of holes but will never find the treasure; and the creative element in a work comes frequently without any apparent effort.

Another factor in the intrinsic/extrinsic debate is the overlap of influence, how much apparent intrinsic motivation is the result of external elements? For example, 'self esteem' is considered by many researchers to be a crucial element in the creative personality, yet the reinforcement of self esteem is almost entirely due to external support. Cox (1926), Rossman (1931), Roe (1965), Merton (1973), and Osche (1990), all found that creative people all aspire to develop self-esteem by winning fame and admiration from respected peers. The idea goes back as far as Milton (1637),

"Fame is the spur that clear spirit doth raise,  
... to scorn delight, and live laborious days."

and is supported more recently by both Auden (1956 p22),

"Every writer would rather be rich than poor ... but he can only be  
reassured by those whose judgement he respects."

and Orwell (1957 p315), who explained his reasons for writing as,

"Sheer egoism. Desire to seem clever, to be talked about, to be  
remembered after death ... It is humbug to pretend that this is not the  
motive, and a strong one."

Osche believes that intrinsic and extrinsic motivation are push and pull 'in the same direction', which is a reasonable assumption but which does not tell us much about how they actually influence the creative act. They may drive the individual to 'want' to be creative, but that is still a long way from the achievement. Motivation only creates the climate for creativity, it does not provide the ability to produce. It may affect the volume of production but not necessarily the quality of the work. Motivation is like the petrol in

the car, it controls the distance travelled, but not the direction or the outcome of the journey.

### **3.48 Discussion**

The study of the nature of creativity began with the study of genius, by asking a whole range of questions, what makes a great composer, writer, painter, scientist, inventor? What characteristics do they have in common? How do they differ? Is there a continuum of creativity such that everyone has some, but a genius has more? Are these qualities innate, or can they be learned or developed? How influential are situations or the environment? It is clear that there are as yet no obviously right answers to these questions, and that there are almost as many theories as there are researchers. Unfortunately, in the context of the study of the creative personality, the current psychometric paradigm, based on the statistics of probability, has posed as many questions as it has answered, and creativity tests have proved more about the creativity of the tester than they have about the testee.

So after more than one hundred years of general interest in the study of creativity, and forty years of quite intensive research, can we at last answer the fundamental question about "Creativity Man"? What can we say about personality that is true of all creatives? If we look at the problem "globally" and use the currently accepted systems of assessment, what do they show? These theories are derived from Factor Analytic studies of 'whole' populations; on the four part Eysenck Scale (Appendix 3.2), creative individuals fit into any quadrant; on the sixteen part Cattell Profile (Appendix 3.2), again the creatives fit no consistent pattern; and using the Five Trait Factors which reliably emerge from all assessments, the adjectival descriptions could fit creatives in various combinations. An analysis of the distribution of the personality components of creatives may show a grouping tendency, but that will only tell us that a proportion of creatives share certain characteristics, and we might extrapolate that people with these combinations of factors are more likely to be creative. But the fact that 99% of mammals in a field are sheep does not put horns on the sheepdog, or as Wellington more eloquently

phrased it "Being born in a stable does not make one a horse". The paradox of this situation is that the most positive statements we can make about creative personality are the negative aspects. We can say more convincingly what will prevent creativity than we can say what will create it.

Perhaps the root of the confusion about the personality of creatives lies in the problem of data collection, which is largely through self-report of the mental lives of these individuals. A major problem inherent in the self-reporting of mental processes is perhaps illustrated by the comments of Edgar Allan Poe (1809-1849),

"What care I for the judgement of a multitude, every individual of which I despise?" ( p196)

followed later by, "It was a lie what I said, I love fame and I dote on it."

Also, Goethe wrote that Isaac Newton,

"... deceived himself as a young man, and then spent his whole life perpetuating this self-deception." ( p395)

Through the medium of their fertile imaginations, creative artists can realise and indulge in all sorts of behaviour which may be out of character with both their self-image and the image they present to the outside world. This attribute has various psychological labels under the banner of 'avoidance of reality', but in the case of a creative person it is actually a positive RESTRUCTURING of reality through imagination; what Einstein called "inner freedom", and Somerset Maugham called "the privacy of the artist". This facility enables the artist (painter, writer or musician) to experience and control tension in a totally secure environment, inside his own head.

The other principal form of data collection is the results of 'so called' Creativity Tests, many of which are verbal and have given rise to frequency of 'ideational fluency' as a major component of creativity. Much of the criticism of these tests is directed at the fact that they are quantitative measures that rarely touch upon the qualitative aspects which are the essence of creativity: and that they are often creatively devised, but require a convergent 'right' answer, which creates problems when the testee is more creative than

the tester. A further criticism of the tests is that they must be continuously revised or they quickly become dated, like last week's pop song. Is there a psychology undergraduate left in the cosmos who has not thought of alternative uses for a brick?

At its most elemental level, creativity comes about largely through the manipulation of symbolic abstractions, intellectual in the domain of science, emotional in the arts, and both sharing the common ground of aesthetics. Yet from all the evidence available, the personality of the individual seems not to influence the actual 'creativity' much at all. Probably the direction, domain, and choice of subject, and certainly the volume of output but listing the traits of 'Creativity Man', it is clear that all these characteristics exist in ordinary man to some degree. So all we can realistically say is that a creative person has 'more' of some positive contributors and less of some inhibiting factors. The only universal conclusions that can be drawn must be couched in very general terms, ALL creative people are:-

- above average intelligence
- open to new experiences
- have cognitive flexibility
- are independent/have self belief
- have good imaginations.

Bolted onto this skeletal framework are a great diversity of

- individual personality characteristics
- environmental/motivational influences
- domain specific motor skills
- verbal/numeric/visual cognitive skills,

which all influence to varying degrees, each individual. To look at the problem from both ends, there is no general creative personality TYPE, after Allport and Cattell; rather a Tardiff and Sternberg "constellation"; and there is no specific creative personality PROFILE, which always produces creative results. Howard Gardner (1982):

"Creative individuals are often marked by an anomalous pattern of intelligences, by a tension between intellectual and personality styles, and by a striking lack of fit between personality and domain ... Indeed, it sometimes appears as if the very lack of fit served as the primary motivation for the individual ... to fashion a creative product." p176.

### 3.5 Summary

This review has looked at creativity through its three main aspects, process, product, and personality, and it is clear that these studies frequently have incompatible theoretical perspectives, each with its own assumptions and methods; raising the spectre of the Brown (1990) assertion that :-

"When intelligent and informed people of goodwill disagree widely about something, chances are nobody really knows what's going on."

It is also apparent that Brown's second "law" also applies in this situation:-

"Those analyzing creativity literature themselves need several personality characteristics commonly attributed to creative people, resistance to frustration, and high tolerance for ambiguity and chaos, in particular." (p10)

Though there is no acknowledged universal theory of creativity, there are large areas of universal agreement, and within the context of this study it is perhaps acceptable to concentrate of those areas of agreement.

The creative process is a label given to the application of a group of specific cognitive abilities, like the ability to perceive/process/manipulate/generate information/ideas/visions etc. The consensus of opinion shows that the following `core` cognitive abilities are found in creative people:-

- relatively high intelligence
- originality
- fluency
- imagination
- flexibility

which are in effect a re-affirmation of the original Guilford(1950) factors of "divergence"

Forty years of quite intensive research has added some more subtle aspects:-

- metaphorical thinking
- decision-making skill
- logical thinking skill
- coping with novelty
- non-verbal communication
- questioning norms and categories.

The accepted general criteria for a creative product are:-

- novelty.....unusual/original/surprising/atypical/unique
- usefulness.....appropriate/valuable/effective/adaptive
- harmony.....satisfying/elegant

The list of personality characteristics of creative people have already been dealt with at some length, but they group into four main aspects:-

- openness.....curiosity/honesty
- independence.....risk taking/free spirit/unconventional
- neurosis.....reflective/withdrawn/isolated
- motivation.....perseverance/absorption/commitment

Allied to all these aspects are the necessary "domain" specific skills required for success in a particular activity, ie. literacy,numeracy,visualisation etc. To pull all these concepts together into some form of meaningful whole, this study will adopt the Teresa Amabile model (1983 p358):-

"Creativity is behaviour resulting from a particular constellation of personal characteristics, cognitive abilities, and social environments",

and apply this structure to the visual arts.



## **CHAPTER 4**

### **4.0 METHODS OF INVESTIGATION/INQUIRY**

#### **4.1 Preamble:** Introduction to the Investigation

#### **4.2 Hypotheses:**

##### 4.21 Personality

##### 4.22 Cognitive Abilities

##### 4.23 Cognitive Style

##### 4.24 Motivation

#### **4.3 Design of the Investigation:**

##### 4.31 Aims of the Student Questionnaire

##### 4.32 Sources of Questionnaire Material

##### 4.33 Procedure: Pilots/Revisions

#### **4.4 Data Collection:**

##### 4.41 Subjects Sixth Form and Undergraduate Students Divided by age/gender/ability into 19 groups

##### 4.42 Data Processing

#### **4.5 Statistical Analysis of Quantitative Results:**

##### 4.51 Eleven variables ..... SES -> Culture Quiz

##### 4.52 Personality ..... t-tests/Factor Analysis

##### 4.53 Cognitive Abilities ..... Spatial Ability/Original Image Production

##### 4.54 Cognitive Style ..... Convergent/Divergent thinking

##### 4.55 Motivation ..... Self Actualisation

#### **4.6 Qualitative Assessment:**

##### 4.61 Introduction

##### 4.62 Student Interviews

##### 4.63 Results: .....a. Cognitive Style .....b. Individual System .....c. Manipulation of Images .....d. Evaluation of Ideas .....e. Personality/Learning styles

##### 4.64 Teaching Styles/Methods

##### 4.65 Conclusion

## 4.1 PREAMBLE

This investigation is an attempt to identify and measure 'creativity' in pupils and students, and to find out if or how the creativity in art students differs in type and degree from the creativity found in non-art students. The basic assumption of this study is that a population of art students is likely to contain more creative minds than a population of non-artists, simply because creativity is a criterion of selection for art courses and not for most other subjects. As the literature review has shown, creativity is no longer seen as a single finite attribute, but as a complex construct; and this investigation aims to look at the cognitive/personality/environmental elements of that construct and how they influence the production of creative artwork, rather than measuring the level of creativity of artists retrospectively through assessment of their output, a bottom-up rather than a top-down approach. These attempts to identify and measure relative amounts of the components of creativity are based on the assumptions that:-

- a. there is a continuum of creative ability upon which everyone has a place
- b. creativity is a set of cognitive abilities which can be developed by training
- c. key motivational and environmental aspects can be provided externally

In support of these ideas, creativity can be defined so as to fit the description of a continuum; there are a great many training schemes (Torrance 1988, de Bono, 1992, et al) which claim to improve creative thinking; and Rogers et al (1983) with their programmes for promoting psychological safety, claim to be able to improve the external environment. There is abundant evidence to show that all these schemes can be effective, but only to a certain level. Higher levels of creativity do not seem to be improved by any amount or type of training, and are rarely understood or explained even by their proprietors, who appear to have only the vaguest ideas of their own creative process. Descriptions range from 'unconscious revelations' to '99% perspiration'. The real questions here are:-

- a. whether it is possible to study creative individuals and discover whether they have characteristics that non-creatives do not have
- b. whether possession of these characteristics is more a matter of degree than of kind
- c. Whether it is possible to identify the process by which the creative work is produced

Further questions occur with regard to the measurement of creativity, within the problem of establishing evaluation criteria:-

- a. are the criteria universal or domain specific?
- b. do the criteria have a rank order of importance?
- c. does a single piece of work have to meet all the criteria?
- d. does outstanding level of one dimension outweigh any missing element?
- e. is a piece of work more creative because it meets more criteria?

This investigation has at its core the basic assumption that by any definition of creativity art students are creative. And for the purpose of this study an art student is defined as either a full-time student accepted onto a degree course, or a sixth form student taking A level art/design with a minimum qualification of an A grade GCSE Art. The criteria for a grade `A` include " the demonstration of a high level of imagination and originality".

Non-art students were selected from equivalent non-art courses and possessed no qualifications in art.

For the purpose of this investigation, creativity is defined as the ability to produce original, imaginative graphic visual images. From the review of current literature, the concept of creativity has moved from the simplistic `genius` mode to the present consensus view that creativity is a function of aspects of:-

1. Personality
2. Cognitive Abilities
3. Cognitive Style
4. Motivation
5. Environment/Situation

As each of these elements is a complex and sometimes contentious issue, each element requires a detailed battery of measures to identify types, styles and levels of ability/ attributes.

The first stage of this investigation was the development of a self-report questionnaire designed to collect data in four of the above areas within the construct of creativity, "Personality", Cognitive Abilities", Cognitive Style", and "Motivation".

This questionnaire includes a series of tests, measures and self-reports, designed to illustrate and evaluate the above position and to compare by statistical analysis the answers of art students and non-art controls. It was hoped to control for the influence of

the fifth element, "Environment/Situation" by using a wide range of schools and colleges in the survey. The general aims of this study were to answer the following questions :-

- a.     - do art students differ in any relevant measurable ways from the general student population, and do these differences (if any) relate to creativity?  
          - do art students have more than non-art students of what psychologists say are creative attributes?  
          - are these creative attributes different from those of say, creative literature or mathematics students?
- b.     - is there a relationship between the level of creativity as defined by the results of creativity tests and questionnaires and the ability to generate and control visual images as illustrated by spatial tests and graphic artwork?

The second phase of this investigation took the form of a practical intervention designed to determine whether:-

- a.     - the level of creative ability as demonstrated in their graphic art can be increased by the application of a specific teaching strategy or stimulus
- b.     - the strength or type of the stimulus does influence the level of creative response
- c.     - the response to the stimulus is general throughout the experimental group, or is related to an individual cognitive style

## **4.2     HYPOTHESES**

### **4.21    PERSONALITY**

There have been many studies describing the personality aspects of creativity, and various levels/scales/inventories (qv) have been devised to identify the creative personality; furthermore, ownership of these characteristics is considered to be a predictor of creative behaviour. The thirty two creative aspects of personality selected by the 1988 Tardif and Sternberg survey (p182-4), formed the basis of the hypotheses for this study.

- P1**    There will be no overall composite measure of creative personality that will distinguish art students from non-art controls in this sample of the population.
- P2**    On individual measures considered to represent creative aspects of personality, art students will score significantly higher than non-art controls.
- P3**    The individual measures will group to form 'factors', or simplified concepts; and the factors formed from the artists' data will differ from those of the controls.
- P4**    That the personality elements most associated with art students will be those of independence and openness to experience.

- P5** Analysis of the data from the thirty-two items will enable predictions to be made about possible student membership of either of the two groups.
- P6** There will be few gender differences in the results of the art student data.
- P7** There will be no differences in comparisons for age (6F v HE) in the results of the art students.

#### **4.22 COGNITIVE ABILITIES**

The variables in the instrument designed to illustrate these abilities were the DAT Spatial Ability Test and the Original Image Production Exercises (after Jellen and Urban 1989).

Specific data in the form of public examination results were used to indicate a general level of academic ability.

##### **Hypotheses:-**

- C1** As a measure of academic ability 'Average O-level Grade' will not correlate with any creativity variables.
- C2** Art students will score significantly higher than the non-art controls on the DAT spatial test.
- C3** Art students will score significantly higher than the control group on the Original Image Production (OIP) exercise.
- C4** There will be a high correlation between scores on the Spatial test and the results on the variables which relate directly to creativity.
- C5** As the OIP exercise is a measure of visual fluency/flexibility/originality/ imagination - all factors of creativity, there will be a strong correlation between the scores on this measure and those of creative personality.
- C6** There will be no significant difference in the scores on the creativity variables between the age groups; ie 6th Form and Higher Education students.
- C7** There will be no significant difference between the OIP scores of the Gender groups.

#### **4.23 COGNITIVE STYLE**

The measures of cognitive style were an eighteen part self-report questionnaire, and a sixteen part Convergent/Divergent questionnaire.

##### **Hypotheses:-**

- S1** The art students will prove to be much more divergent than the non-artists.
- S2** The art students will be much more flexible in their approach to problems.
- S3** The art students will be more comfortable in unstructured or novel situations.

## 4.24 MOTIVATION

The measures of motivation were a sixteen part statement about hobbies and extra-art activities, and four self-report questions on attitude to work, from ALIS; and a twenty part self-report questionnaire on "Self Actualisation".

### Hypotheses:-

- M1 That art students are 'absorbed' by their subject and so will score low on alternative hobbies/interests.
- M2 That art students have strong 'intrinsic motivation' and are strong self-actualisers.
- M3 That art students are motivated by some form of intellectual curiosity tempered with an emotional commitment.

## 4.3 DESIGN OF THE INVESTIGATION

This research was conducted in two parts:-

- 1 Analysis of the student population sample by self-report questionnaire/assessments followed up by personal interviews.
- 2 A structured teaching intervention, programmed after analysis of students' reports of their 'best' lessons, and self-reports by teachers of their most successful teaching styles/methods.

This section of the report concerns part 1, the development and implementation of a questionnaire designed to illustrate aspects of creativity in art students and non-art controls.

### 4.31 AIMS OF THE STUDENT QUESTIONNAIRE

There are so many diverse theories of creativity, that even the basic elements chosen as the root of this investigation are still subject to debate. However, a choice had to be made, and on the basis of the available evidence and the author's twenty years practical experience, the following attributes were selected, a) as being most relevant to creative production in the visual arts, and b) as capable of being objectively assessed.

Creative Personality: independent/open-minded/determined/curious/intuitive

Cognitive Abilities: spatial/original image production/ preference for complexity/ academic ability

Cognitive Style: convergent/ divergent thinking

Motivation: self-actualisation/ absorption/ cultural awareness

The questionnaire was framed in two parts, A and B, and is shown in its entirety in the Appendices 4.1 to 4.8. It was devised to collect the following data:-

#### **Part A (See Appendix 4.1)**

##### **Item**

- Personal Details: name/age/sex/institution for identification/classification of subject.
- 1 Socio-Economic Status: based on parental occupation.
- 2 Average 'O' Level Grade: as a measure of general academic ability, and predictor of future academic success.
- 3 Hobbies: a measure of absorption, of how much time is spent on other non-art activities.
- 4 Creativity Factors: preliminary self assessment of creativity. (Appendix 4.2)
- 5 Pattern Preference: preference for complex/asymetric images (Appendix 4.4).  
Shape Recognition: a measure of basic 2D spatial ability. (deleted).
- 6 Originality: the ability to produce original graphic images (Appendix 4.5).
- 7 Spatial Ability: DAT test of mental rotation (Appendix 4.6).
- 8 Creative Personality: ) Self-assessed questionnaire (Appendix 4.7).
- 9 Self Actualisation: ) responses measured (Appendix 4.8).
- 10 Divergent Thinking: ) on a Likert-type scale. (Appendix 4.8)
- 11 Culture Quiz: assessment of knowledge of the arts. (Appendix 4.8).

#### **Part B**

- 1 Student Type
- 2 Teaching methods: art lesson reports (Appendix 4.2).
- 3 Responses to art: range/preferences/priorities (Appendices 4.3 and 4.5).

### **4.32 SOURCES OF QUESTIONNAIRE MATERIAL**

#### **Part A**

The procedure for the collection of the first three items, SES, AvOG, and Hobbies, was provided by the A-Level Information System (ALIS) of Newcastle University School of Education; which provides access to comparative data from a vast student population.

ITEM 1, SES, Socio-Economic Status was based on the parental occupation of the student, quantified to give a comparative measure according to a formula derived from ALIS.

ITEM 2, AvOG. The students were asked to complete a full inventory of their 16+ examination results, the mean of these grades was calculated, a measure identified by

ALIS as the "best predictor" of future academic success.

ITEM 3, Hobbies. The students were asked fifteen questions about their out of school activities, and given one score for each positive response.

ITEM 4, Creativity Factors. This was taken from the creative aspects of the original J. P. Guilford factor analysis of the structure of the intellect:- fluency, flexibility, sensitivity, originality, imagination and motivation. Students were asked to rank themselves on a Likert scale, for possession of these factors.

ITEM 5, Preference for complex/asymetric patterns came originally from the work of Berlyne (1965) (Appendix 4.9), supported more recently by Sternberg et al (1988). The forty actual graphic examples of abstract patterns were devised and produced by the author, and paired for preferential choice on the basis of either complex / simple, or symmetrical / asymmetrical.

A Shape Recognition test was included in the early questionnaires, based on an Essex County 'embedded figures' test which has its origins in Gestalt psychology. Subjects were required to identify and select given shapes from a mass of visual information. This test proved very quickly to be too low level for this age/ability group, every art student scoring 100%. So this item was dropped from later questionnaires and all data processing.

ITEM 6, the Original Image Production (OIP) exercise, again has its roots in Gestalt theory, in the idea of 'perceptual closure' (Appendix 4.10). This particular form of the test was devised by Jellen and Urban in 1989, and modified for this population sample by the author. Full details of the development of this test follow on p249-265.

ITEM 7, the Spatial Ability test, was a part of the DAT set. Full details of the origin and development of this test follow on p239-248.

ITEM 8, the fifty part self-assessed Creative Personality/Cognitive Style questionnaire was framed by the author on the basis of the 1988 survey of American research psychologists by Tardif and Sternberg. Items 1-18 are concerned with Cognitive Style, and Items 19-50 with Personality.



ITEM 9, the Self-Actualisation questionnaire was a twenty part section based on the findings of Maslow. Full details of the origins of this test are on p274-280.

ITEM 10, the Convergent/Divergent Thinking questions were based on the work of Hudson (1966 p190-2). More details are given on p266-273.

ITEM 11, the final item in the questionnaire was labelled a "Culture Quiz", and was devised by the author as a measure of the subjects' knowledge of four areas of the creative arts, music, literature, fine art and the mass media.

### **Part B**

This section of the questionnaire contained an inventory of teaching methods, which had its origin in the work of Renzulli and Smith (1978), with additional methods appropriate to the teaching of the arts supplied by a further survey by the author of forty British teachers (Appendices 5.1/5.2/5.3).

## **4.33 PROCEDURE: PILOTS AND REVISIONS**

A first draft of the student questionnaire was compiled for pilot testing in November 1990 and included seven elements, plus a section on art teaching and responses to art images:-

### **Part A**

- SES
- AvOGrade
- Hobbies
- Original Image Production
- Creativity Factors
- Self Actualisation
- Culture Quiz

**Part B** Student type/Teaching Methods/Responses to art.

This draft was piloted on twelve art college students who offered the following comments:-

- three found it too long
- two found it boring
- two found some of the questions badly worded
- two found some of the questions inappropriate
- seven students said they enjoyed it.

The first revision was to delete some of the ALIS based attitude questions in Part 1, then this whole section was redrafted and the layout was changed to simplify the text and improve the visual impression. This was done partly to increase the speed at which this section could be completed and so allow for the additional tests which were needed to complete the data. These additions were:-

- Pattern Preferences
- DAT Spatial Ability Test
- Creative Personality
- Divergent Thinking.

The revised instrument was piloted on a further twelve sixth form students whose comments were most favourable. The only adverse comment, in spite of the increased duration, was a difficulty in understanding some of the questions. But as these were never the same questions, it was assumed that individual students were unfamiliar with the meaning of certain words. Nevertheless, further attempts were made to simplify the phrasing of the questions and to replace where possible those technical words likely to be outside the vocabulary of the population sample.

As it was not possible to reduce the timescale needed to complete the questionnaire fully, without omitting important sections, it was necessary to change the parameters of the data collection. It was decided to allow the subjects to take away the questionnaire, complete it in their own time and return it by post.

One problem apparent from the first, and for which no answer was found, was the decision by some art students not to complete certain sections of the questionnaire (not the same aspect, different students omitted different sections). When questioned about those omissions, the responses were often quite casual, "didn't fancy it", "not my scene"; so there was no obvious ability problem in this issue and perhaps this attitude is just a reflection on the rule-breaking independence which some believe to be at the root of creativity.

## 4.4 DATA COLLECTION

### 4.41 SUBJECTS

This study sampled 35 Sixth Form and Higher Education institutions which provided 220 students as subjects for investigation. However, only 194 students completed enough of the questionnaire to warrant inclusion in the analysis of the data. They were divided for the purpose of analysis and cross-reference into 6 main and a further 20 sub-groups.

**TABLE 1 NUMBERS of STUDENTS PRESENT in EACH DATA GROUP**

	n =
1 All Artists .....	129
2 All Controls.....	65
3 All Males.....	78
4 All Females .....	116
5 All Sixth Form (6F) .....	109
6 All Higher Education (HE) .....	85
7 6 Form Artists .....	73
8 HE Artists .....	56
9 6 Form Controls .....	36
10 HE Controls .....	29
11 Male Artists.....	55
12 Male Controls .....	23
13 Female Artists .....	74
14 Female Controls .....	42
15 6 Form Male Artists .....	26
16 6 Form Female Artists.....	47
17 6 Form Male Controls .....	13
18 6 Form Female Controls .....	23
19 6 Form Males.....	39
20 6 Form Females.....	70
21 HE Male Artists .....	29
22 HE Female Artists .....	27
23 HE Male Controls .....	10
24 HE Female Controls.....	19
25 HE Males.....	39
26 HE Females .....	45
All Students.....	194

These group numbers will vary slightly in the subsequent test analyses, as not all of even these students completed all the tests.

## INSTITUTIONS

Bootham School	Newcastle Polytechnic
Bournemouth College of Art	Newcastle University
Burnside School	New College, Durham
Cleveland College of Art	Northbrook College of Art
Crewe & Alsager College	Nottingham Polytechnic
Dundee University	Peterlee College
Durham Sixth Form Centre	Queen Elizabeth S F Centre, Darlington
Exeter College of Art	Redewood School
Gateshead College	Rutherford School
Gosforth High School	Sacred Heart School, Fenham
Huddersfield University	Selby College
Leeds Polytechnic	Sheffield University
Leeds University	Sir Wm Turner's Sixth Form College
London University	Stockton Sixth Form College
Manchester Polytechnic	Wearside College
Marton Sixth Form College	Wolsingham College
Monkwearmouth College	

The target sample was fifty subjects in each of the six main categories, this being an adequate number for factor analysis, and realistically the maximum number that could be handled by one researcher. Although these numbers were exceeded in all the main groups, and in all the art student groups; due to difficulties in the data collection and poor returns, the numbers in some of the sub-groups remained dangerously low.

A major factor influencing the data collection was cost. The questionnaire had thirty pages, and many of them contained detailed illustrations. In order to maintain a high standard of presentation, they needed to be photocopied rather than duplicated thus dramatically increasing the cost, unfortunately an important consideration in a self-financed project.

This meant that subjects have had to be targeted individually rather than by speculative blanket distribution to institutions, which was the initial plan. The first attempts at this block distribution proved an unmitigated disaster. Despite preliminary talks and the promised support of both staff and students; returns from HE Fine Art departments totalled only nine out of one hundred. This raised the spectre of a possible print run of two thousand! Plan B consisted of using contacts made whilst data collecting for the

university ALIS project. This provided direct contact and promises from individual volunteers from more than twenty different educational establishments. Despite the inherent problems of a lengthy questionnaire (one hour plus), the percentage of returns through this method became a much more satisfactory seventy five; it also had the beneficial side effect of dramatically increasing the spread of sources and so minimising the "school effect". However, it did introduce the potential problem of 'self-selection' bias as identified by Oppenheim (1992).

#### **4.42 DATA PROCESSING**

In preparation for the return of questionnaire data, a series of individual and comparative data sheets were produced. The "Individual Student Creativity Profile" sheet was to contain all the information from the questionnaire, with all the test scores totalled and then transposed onto one single sheet (Appendix 4.11). This data included:-

- 4 Student identification items
- 126 answers to Tests / Questions converted to numerical scores
- 25 written responses to art
- 155 items in total.

The scores/rankings/coded data were then transferred to the Comparative sheets, which contained all the members of the same group, 6FM, 6FF, HEM, HEF. Then additional comparative Test sheets for specific variables were produced:

- Original Image Production ..... (12 items)
- Creative Personality ..... (32 items)
- Self Actualisation ..... (20 items)
- Divergent Thinking ..... (16 items)

These contained all the individual item scores from within the overall variable; listed with scores on the same items by other members of the group. All the above data was then entered on coding sheets for statistical analysis by computer through the SPSS-X programme.

## **4.5 STATISTICAL ANALYSIS OF QUANTITATIVE RESULTS**

The conventions used throughout this chapter are:-

- the use of parenthesis to denote negative (-ve) numbers.
- for ease and speed of comprehension all calculations in this study have been reduced to 2 decimal places. Thus all scores less than .005 are shown as .00.
- correlations marked with an asterisk (\*) are statistically significant at the level of  $p < .05$ .
- where effects sizes have been calculated they are listed under F/X.

### **4.51 ELEVEN VARIABLES**

The first stage of the analysis was conducted on the raw scores of eleven variables given these brief labels:-

- |    |                      |
|----|----------------------|
| 1  | SEStatus             |
| 2  | AvOGrade             |
| 3  | Hobbies              |
| 4  | Creative Factors     |
| 5  | Pattern Preference   |
| 6  | Originality          |
| 7  | Spatial              |
| 8  | Creative Personality |
| 9  | Self Actualisation   |
| 10 | Divergent Thinking   |
| 11 | Culture Quiz.        |

These particular items had been selected for analysis because of previous research (qv), which had identified a relationship between some of these components and 'creativity'. Items 1, 2, SES and AvOG were predicted not to have much influence on creative ability. They were included in this survey partly to confirm this hypothesis; and also as a check on whether the composition of the groups in this sample was consistent for socio-academic elements and so eliminate any possible bias in this respect. It was also possible to check how representative the Sixth Form sample was of the larger student population, by comparing these results with those available from the ALIS project.

Items 3 to 10 were all aspects for which claims had been made about their role in

creativity.

Item 11, the Culture Quiz, was really a subsidiary test. It was included to see if there was any correlation between SES and Cultural awareness; and to check any relationship with the qualitative elements of this investigation.

The data from within all these variables (126 items) were totalled giving a set of eleven separate values for each student group. Mean scores and Standard Deviations were calculated for all items and all subjects, who were then divided into their 26 constituent groups for comparison.

The six primary groups were paired to study their possible relationships and differences, on the basis of:-

ABILITY	Art students	v	Controls (non-artists)
GENDER	Males	v	Females
AGE	Sixth Form	v	Higher Education

#### **t-tests**

The first set of results produced for this study were the two-tailed t-tests on the Eleven Variables, which illustrated a number of interesting and apparently significant points. However, two of the variables, SES and AvOGrade, produced results that showed differences between the main groups of Artists and non-art Controls which threatened to void the equivalence of the samples which were the foundation of the analysis. Though all the evidence from earlier research showed the comparative irrelevance of these variables with regard to their influence on creative thinking, it was decided to subject the data to further statistical analysis to determine whether the apparent bias in these groups did produced any noticeable influence on the actual levels of creativity as measured by the other variables in this set. This analysis took the form of Partial correlations with the results held constant for SES and AvOGrade (see Appendix B). The results taken from the full student sample (n=194), showed quite clearly that the levels of SES and AvOG contained in this sample did not influence to any degree the ratings on the other creativity variables.

However, this analysis of the results did bring up a further problem, due largely to the inexperience of the author; the computed SPSS-X print-out showed that the student numbers listed in the groups did not match those in the initial series of t-tests, and this rang obvious alarm bells.

The raw data for this survey arrived over a period of six months, followed by a further two months of targetting the low number sub-groups. Because of the sheer volume of data generated, and number of variables, interim results were produced as guidelines showing potentially fruitful areas and significant responses. The Eleven Variables were the first series of tests to be computed, and these results set the pattern for further analysis.

Unfortunately, as the study expanded and specific tests were looked at in more detail, these early results were left in place, right through to the final print. So they did not include the whole sample, and particularly not the later additions from the smaller sub-groups where each score exerts the maximum influence. This also accounted for certain anomalies in the numbers of some of the groups, previously disguised by the failure of some students to complete all aspects of the questionnaire.

So it was decided that the only way to resolve this problem, and re-establish the validity of the data, was to re-calculate all the test results from the original raw data source, using the full student sample, and producing completely new tables of results. For the sake of complete impartiality, these tests were computed by the Department of Continuing Education at Leeds University which has provided all subsequent results. Means and Standard Deviations were calculated for all groups on all the variables (Appendix A), then correlation coefficients were produced to demonstrate any association between the groups on any of these variables.(Appendix B)

**TABLE 2 : 11 VARIABLES, BIVARIATE CORRELATION COEFFICIENTS**

(All cases n=194)	SES	AvOG	HOB	CFAC	PAT	ORIG	SPAT	PER	SACT	DT	CUL
Artist v Control	.00	.04	.11	.26*	.23*	.18*	.09	.16	.05	.06	.10
Male v Female	.02	.15*	.07	.02	.03	.07	.15*	.03	.01	.11	.01
6 Form v HE	.02	.13	.04	.09	.20*	.21*	.05	.10	.07	.09	.07



Two-tailed t-tests were carried out on the means of the total scores on the eleven variables between the relevant groups of students. Detailed results are listed in Appendix C . Seven items showed differences which were statistically significant at the level of  $p < .05$ . With reference to the Sakoda et al (1954) Test of Significance for a Series of Statistical Tests (Appendix 4.12), the probability of this number of significant results being produced by chance is at the level of  $p < .00$ . Table 3 is an alternative way of looking at these results.

**TABLE 3: STATISTICAL SIGNIFICANCE LEVELS OF t-tests (2-tailed)**

Variables	SES	AvOG	HOB	CFAC	PAT	ORIG	SPAT	PER	SACT	DT	CUL
Artist v Control	.98	.55	.11	.00*	.00*	.01*	.23	.11	.46	.44	.15
Male v Female	.81	.04*	.34	.83	.69	.37	.04*	.65	.87	.15	.84
6Form v HE	.83	.08	.61	.20	.01*	.00*	.52	.17	.33	.24	.32

Several interesting and surprising patterns of results became apparent:-

- the art students outscored the controls on only five of the eight variables designed to measure elements of creativity, and only two (CrFAC and ORIG) at a significant level ( $p < .05$ ); also the Controls outscored the Artists on PATtern Preference. These results would indicate only some support for hypothesis P5.
- there were few age differences, supporting hypothesis C6, with only two items significant, and both of them in favour of the younger sixth formers.
- there were few gender differences, with only SPATial significant confirming hypothesis P6.
- though the females had significantly higher 'O' level grades, the males produced higher originality scores; lending support to the general hypothesis that high academic ability is not an important component of creativity.

However, the high AvOGrade scores shown by the females confirmed the earlier possibility of sample bias and so required further analysis in the form of partial correlations, with the results for AvOG held constant.

**TABLE 4: PARTIAL CORRELATIONS : CONTROLLED FOR AvOGRADE**

All Students n=194	HOB	CFAC	PAT	ORIG	SPAT	PER	SACT	DT	CUL
Artist v Control	.11	.25*	.23*	.18*	.08	.12	.05	.06	.10
Male v Female	.03	.02	.02	.09	.17*	.04	.05	.12	.07
6 Form v HE	.00	.13	.19*	.19*	.03	.09	.10	.07	.13

These results correspond closely to the overall correlation analyses, demonstrating the lack of influence of academic ability on differences between between the groups on creativity-related variables.

### **DISCUSSION OF THE TESTS:**

In the **Whole** group analysis of the battery of tests on the basis of **ABILITY**, ie. Artists v Controls (n=194), only two of the variables CreFAC  $p<.00$ , and ORIG  $p<.01$  tested in favour of the art students, and one PAT PREF  $p<.00$  tested in favour of the controls.

Within these measures of creativity, the best indicators of statistically significant differentiation between artists and controls appear to be CreFAC and ORIG; whereas the worst indicator is clearly PAT PREF which produced significant results in all groups, but in the wrong direction, with the controls outscoring the artists. These results contradict hypothesis **M3** and the findings of Berlyne et al, who claimed that a preference for complexity is an attribute of creative individuals.

Within the **GENDER** groups, the Males (n=77) tested in favour of the artists on two items, CreFAC  $p<.00$ , and ORIG  $p<.05$ , and in favour of the controls on two items, HOBB  $p<.02$  and PAT PREF  $p<.01$  ; whereas within the Female group (n=117) only CreFAC  $p<.02$  tested for the artists, and PAT PREF  $p<.05$  tested for the controls.

In the whole group analysis of the tests on the basis of gender, the evidence was inconclusive, supporting hypothesis **C7**, that gender is not an influence on creative ability. Of the eleven tests, only one item SPAT  $p<.01$  scored in favour of the male students, and one item AvOG  $p<.04$  in favour of the females.

Spatial Ability was thought to be an important contributing factor to visual creativity, dealing as it does with the organisation of visual information, so the gender difference was surprising and will be considered at greater length in section 4.53 p245-7.

The significant gender difference in academic ability was also surprising, particularly in its consistency, with the females outscoring the males in all the main and equivalent sub-groups except HE Controls, where the males produced a slightly higher mean.

Within the **AGE** groups, the 6th Form (n=109) produced three items in favour of the artists CreFAC  $p<.05$ , ORIG  $p<.00$ , and SPAT  $p<.01$ ; whereas the HE group (n=85) showed CreFAC  $p<.00$ , and SelfACT  $p<.02$  in favour of the artists, with HOBB  $p<.05$  and PAT PREF  $p<.00$  in favour of the controls.

The difference in age between sixth formers and undergraduates was not thought to play a major part in the visual creative thinking of students, that is the older students were not expected to perform much better; and this hypothesis **C6**, was supported by these results. Of the eight items measuring aspects of creativity, six scored in favour of the younger students, two statistically significant, ORIG  $p<.00$  and PAT PREF  $p<.01$ .

#### **Analysis of the individual variables:**

Of the eleven variables, eight were expected to predict some aspect of creative behaviour. On the basis of the group mean scores, four scored in favour of the art students (two SS) and four in favour of the non-art controls (one SS); a fairly mixed and inconclusive set of results. Within this sample of the student population, the art students produced more original work, and possessed more of the Guilford factors of creativity (in their own opinion); whereas the non-art students preferred more complex visual patterns.

### **ITEM 1                      SES**

The mean scores on this variable showed no significant differences between any of the groups, in fact the means of the two main groups were almost identical, 68 for the artists and 68 for the controls; a result which was expected as earlier research had shown little correlation between SES and creativity. However, the grading of SES through the coding of parental occupation is at best a fairly arbitrary measure. The system used in this study was taken directly from ALIS, for simplicity, ease of operation, and access to further data. The students were asked to select from a given list of sixteen jobs, the most appropriate label for their parents (The Market Research Society (1991) listed 1600 jobs), these labels were then coded and given a score. Unfortunately, one defect of the system was the inclusion of four confusing categories, "Deceased", "Retired", "Unemployed" and "Don't

Know", creating the possibility of a built-in significant error. However, this possible error is applied equally to both groups. Since the implementation of this test, the author has done considerable work for the Gallup organisation and realised that considerably more information about the background of each subject is required before any meaningful socio-economic rating can be calculated.

With regard even to the parameters of this study and with the benefit of 20:20 hindsight it would appear that in this form the SES test is too inaccurate and so is a poor measure.

**TABLE 5: GROUP MEAN SCORES FOR SES**

All students n= 129	Mean	SD	r	SS p<
Artist	68	30		
Control	68	22	.00	.98
Male	67	25		
Female	68	29	.02	.81
6 Form	67	24		
HE	68	31	.02	.83

The actual influence of SES on creativity has never been demonstrated, but Torrance (1971 p79) offers an alternative thesis "...lack of expensive toys and play materials contributes to their (children) skill in improvising with common materials....the life styles of disadvantaged families help develop skills in group activities and problem solving."

## **ITEM 2 Av O Grade**

The significant difference in academic ability between the sexes in this sample, seems to be caused by the consistently high scores of the female element, (overall mean 75; artists 77, controls 72, 6Form 76, HE 73) and the equally surprising low scores of the HE male artists (mean 63).

**TABLE 6: GROUP MEAN SCORES FOR AvOGRADE:**

All students n= 129	Mean	SD	r	SS p<
Artist	73	22		
Control	71	15	.04	.55
Male	69	20		
Female	75	20	.15	.04*
6 Form	75	17		
HE	70	24	.13	.08

The relationship between Creativity and Intelligence has been questioned by a number of researchers; Wallach and Kogan (1965 p348-69), found that the correlation between the two to be quite low; Hayes (1990 p136) and Michael and Wright (1990 p41) report that surveys of work done in this field show conflicting results, some show a positive relation and some none at all. In so far as AvOGrade is a function of intelligence, these findings were confirmed by the results of this study, which show low correlations between AvOG and measures of creativity like originality and divergent thinking.(see Appendices A,B)

		<b>Creative Personality</b>	<b>Originality</b>	<b>Divergent Thinking</b>
All Students	p<	.16	.43	.41
Artists	p<	.13	.12	.32
Controls	p<	.41	.37	.26
Males	p<	.47	.33	.41
Females	p<	.03*	.04*	.24
6th Form	p<	.12	.31	.41
Higher Ed	p<	.38	.34	.24

### ITEM 3 Hobbies

#### **ITEM 4                      CreaFac**

As this item was based on the six creative factors identified by Guilford, (fluency, flexibility, sensitivity, originality, imagination, motivation), it was expected that the art students would claim more possession of them than the control group, and this was in fact the case, at a SS level of  $p < .00$ . Even the sub-groups produced differences between the artists and controls at significant levels of probability, in the male students  $p < .00$ , in the females  $p < .02$ , in the 6F  $p < .05$ , and in the HE  $p < .00$ .

#### **ITEM 5                      PattPref**

This was the only variable which consistently differentiated statistical significance in favour of the non-art controls, with overall means of 66:54 and  $p < .00$ ; due mainly to the very low (45) HE artist scores, male (45) and female (47), compared with the HE control scores of 72 and 62 respectively.

This does not support those theorists (Berlyne 74, Winner 82, Eysenck 88) who believe that a preference for complexity (M3) is a necessary pre-requisite for creativity.

#### **ITEM 6                      Originality**

As expected, this item was the strongest indicator of the difference between the artist and control groups,  $p < .01$ ; supporting C3. Perhaps the surprising element was the difference between the age groups with means of 57:47 in favour of the 6th Formers,  $p < .00$ ; reinforced by the differences in both the art groups, between the 6F (61) and the HE (48), and also by the controls, 6F (48), HE (43). There was no significant difference between the gender groups. This issue will be considered in more detail in section 4.53 B.

#### **ITEM 7                      Spatial**

This item was also an indicator,  $p < .04$ , of the difference between the gender groups, where the lowest scores are again in the Female Control group (mean 42), and the HE Females (mean 43), compared to the male equivalent group means of 55 and 55 respectively. This variable and the results are discussed in more detail in 4.63 A.

## ITEM 8

### Creative Personality

This was the most surprising result of the set. It was the only variable which showed NO statistically significant difference between ANY of the 26 groups compared. It had been expected that there would be a large difference in the creative aspects of personality between the art students and the non-art controls; a small difference between the sixth form and higher education students; and no difference between the sexes. These hypotheses were supported to some extent by the results, but not at any acceptable level.

The overall level of statistical significance for the combined personality variable was:-

for Artists	v	Controls	$p < .11$
for Males	v	Females	$p < (.65)$
for 6th Form	v	Higher Ed	$p < (.17)$

However, it seemed possible that particular items within the total would show potential creative differences, and that these scores were being obscured by the less creative elements.

It was clear that these results, taken at face value would not support much further effort, so it was decided to undertake a "Discriminant Analysis" using Wilkes' lambda, to establish whether these variables could differentiate 'creatives' from 'non-creatives' (or in reality, the 'very creatives' from the 'maybe creatives').

Discriminant Analysis has the advantage of taking all the variables together, then presenting all the information contained in these multiples summarised as a single index.

The initial analysis was taken on the mean total scores of all eleven variables, and showed that the percentage of cases correctly identified as artists or controls was 71.5%. A further analysis of a random 50% of the sample showed the level of correct grouping to be 72.2%. So it appears that the totalled scores on these eleven variables will differentiate artists from non-artists.

When the analysis was conducted on only the sixth form element of the sample, the percentage grouped correctly went up to 78.4%.

**TABLE 8: DISCRIMINANT ANALYSIS: ELEVEN VARIABLES**

	Actual Group	Number of Cases	Predicted Group Membership		Percentage Correctly Identified
			Art	Control	
All Students	Artists	128	92 71.9%	36 28.1%	<b>71.5%</b>
	Controls	65	19 29.2%	46 70.8%	
Random 50% sample	Artists	64	46 71.2%	18 28.8%	<b>72.2%</b>
	Controls	33	9 27.3%	24 72.7%	
Sixth Form	Artists	73	58 78.9%	15 21.1%	<b>78.4%</b>
	Controls	36	8 22.2%	28 77.8%	

**DISCRIMINANT ANALYSIS: PERSONALITY VARIABLES**

The analysis was then carried out on the subset of 32 personality variables, and the percentage of cases correctly labelled was 78.2%. This score was repeated in the analysis of the sixth form only sample, when the correct grouping level rose to 83.9%. So it seemed that these personality items would discriminate between artists and non-artists, and therefore could be used to identify creative individuals

**TABLE 9: DISCRIMINANT ANALYSIS: PERSONALITY VARIABLES**

	Actual Group	Number of Cases	Predicted Group Membership		Percentage Correctly Identified
			Art	Control	
All Students	Artists	128	105 82%	23 18%	<b>78.2%</b>
	Controls	65	19 29.2%	46 70.8%	
Sixth Form Only	Artists	73	62 84.9%	11 15.1%	<b>83.9%</b>
	Controls	36	6 16.7%	30 83.3%	



Eleven of the sixth form art students were wrongly classified, and from study of their data there was no obvious common reason. However, six of these students were known personally to the author and all six chose not to go into full-time art training. Checks on the career aspirations of the other five showed that only one of these students wished to make a career in 'art', that is to study art full time in Higher Education.

Further examination of this variable is conducted in section 4.52.

#### **ITEM 9            Self Actualisation**

This item differentiated the artists from the controls only in the HE group, with a level of probability of  $p < .02$ ; with both the HE art groups producing high mean scores, males 80, and females 79, compared to the equivalent control group means of 71 and 71. This variable is discussed at some length in section 4.55 .

#### **ITEM 10          Divergent Thinking**

This item produced another set of surprising results. Divergent Thinking has provided the cornerstone of research into creativity, yet this test did not distinguish between these students on the basis of ability, gender or age; in fact the controls outscored the artists with means of 57 to 55, partially explained by the low mean of the HE female artists (46) and the high mean of the HE male controls (63). This variable is discussed in more detail in section 4.54 .

#### **ITEM 11          Culture Quiz**

This item showed that the art students were slightly more culturally aware than the controls, with means of 60 and 54, SS  $p < .15$ ; and the HE students slightly more so than the sixth formers, with means of 60 and 56, SS  $p < .32$ ; and negligible differences between the genders in all the sub-groups.

## 4.52 PERSONALITY

There have been many studies describing the personality aspects of creative individuals, including Gough (1965, 1979), Cattell and Eber (1968), Domino (1970), and Welsh (1977). The general conclusion of these researchers has been that personality is an element in creativity and the various scales and inventories which have been devised and tested can successfully identify the creative person; also that ownership of these characteristics can predict creative behaviour.

This investigation will attempt to differentiate artists from non-artists by analysis of their personality, and to identify those characteristics artists have that non-artists do not. These analyses are based on the answers to the 32 item questionnaire derived from the identification of the creative aspects of personality by Tardif and Sternberg (1988). It was decided to use this inventory of personality characteristics, because:-

- it was the most recent, and so combined previous ideas with current thinking
- it was the most representative, taking in the views of 17 contemporary psychologists
- it was the most comprehensive, and used concise descriptive words.

The thirty two characteristics were included in the Student Questionnaire (Appendix 4.7), framed as questions to be graded on a Likert scale according to the level of response:-

Item 19 Do you feel **empathy** with, or sensitivity to the needs of others ?

Item 20 Do you consciously distance yourself from your **social group** ?

Item 21 How important is it for you for your work to be considered scrupulously honest, and that you should have **integrity** ?

Item 22 Do you ever, in your own mind, feel **tension** or conflict between yourself and your social group ?

Item 23 When faced with opposition/antagonism/hostility, do you prefer to **confront** it or walk away ?

Item 24 How prepared are you to take **intellectual risks**, to speculate, to form a hypothesis, to defend an unpopular point of view ?

- Item 25 How **determined**/dedicated/tenacious/persistent are you ?
- Item 26 Are you a naturally **curious**, inquisitive person, always searching for answers ?
- Item 27 Do you welcome `**new experiences**` ?
- Item 28 Do you find your main subject/interest, totally fascinating and **absorbing** ?
- Item 29 How much **self-discipline** do you have ?
- Item 30 Do you resist or **reject** other people's `**limits**` when they are imposed on you ?
- Item 31 Do you ever feel **isolated** from your social group ?
- Item 32 Do you have a strong **commitment** to your work ?
- Item 33 How much of your time do you spend **playing** with ideas ?
- Item 34 Do you have intense feelings or emotions ?
- Item 35 Are you an `**intuitive**` person, do you have strong `**instincts**` and `**insight**` ?
- Item 36 Do you consider yourself to be a `**free spirit**` ?
- Item 37 Do you place a high value on `**originality**` ?
- Item 38 What is your reaction to **unconventional** behaviour or dress ?
- Item 39 Do you prefer **complex**/challenging problems to those more simple?
- Item 40 Is your self-confidence easily undermined by your **self-criticism** ?
- Item 41 Do you feel the need for, or strive for **recognition** of your ability ?
- Item 42 How well are you able to **organise** yourself ?
- Item 43 Do you prefer to set your **own rules** ?
- Item 44 Do you feel the need in your work to be **competent**/proficient/skilful ?
- Item 45 Are you often withdrawn/**reflective**/pre-occupied with your own thoughts ?
- Item 46 Do your actions or opinions have an impact or **influence** on others ?
- Item 47 How tolerant are you of **ambiguity**, of things that have more than one meaning ?
- Item 48 Do you have a **broad range** of interests ?
- Item 49 How easy do you find it to **motivate** yourself to work ?
- Item 50 How often do you look for outside **stimulus** in your work ?

The study of the creative personality has taken place within two distinct paradigms, psychometric analysis and biographical survey. This investigation is an attempt to combine the two, by taking the self-assessed reports of accepted creatives and transposing these questionnaire responses into numerical data by a "Likert" scale, then subjecting these answers to statistical analysis.

Item analysis was performed on the mean scores of the thirty-two personality items and only one "preference for complexity" failed to meet the required level of significance(.03) However, it was decided to keep this item in the test as it had already passed the selection procedure of Tardif and Sternberg, was considered a major element by Berlyne, and a reduction of one item would not unduly influence the overall results.

Further analysis of the effectiveness of these personality items in the identification of creative individuals was conducted through t-tests of the separate thirty-two items across the various groups. These t-tests were carried out for all items and all groups to establish if there were any statistically significant differences between the mean scores of particular groups.

#### **ABILITY: Comparison of Art Students and Non-Art Controls**

The results showed that with regard to art "Ability", twenty-five items scored in favour of artists (eight statistically significant) as opposed to seven items in favour of the controls (though none were statistically significant and five of these items had almost identical scores to the artists).

**TABLE 10: STATISTICALLY SIGNIFICANT PERSONALITY VARIABLES**

	ITEM	ARTISTS		CONTROLS		t	SS	FX
		mean	SD	mean	SD			
28	Absorbed	3.16	.62	2.86	.74	2.62	.01	.41
31	Isolated	2.58	.88	2.28	.86	2.15	.03	.35
32	Commitment	3.27	.64	2.97	.68	2.77	.01	.44
33	Play	2.95	.58	2.51	.60	4.54	.00	.73
37	Originality	3.28	.73	2.95	.72	2.87	.01	.46
40	Self Critic	3.15	.84	2.84	.73	2.48	.01	.43
41	Recognition	3.37	.68	3.05	.69	2.85	.01	.46
45	Reflective	3.20	.85	2.97	.73	1.90	.05	.32

**GENDER : Comparison of All Males with All Females**

These comparisons showed that females scored higher on twenty-six items (6 statistically significant), whereas for males the number was only six, with one statistically significant.

**TABLE 11: STATISTICALLY SIGNIFICANT PERSONALITY VARIABLES**

	ITEM	MALES		FEMALES		t	SS	F/X
		mean	SD	mean	SD			
19	Empathy	2.97	.70	3.23	.76	(2.27)	(.03)	.34
21	Integrity	2.44	.88	2.93	.91	(3.52)	(.00)	.54
22	Tension	2.80	.77	2.55	.88	2.01	.05	.28
25	Determined	3.04	.67	3.41	.65	(3.53)	(.00)	.57
34	Emotion	3.26	.74	3.49	.58	(2.17)	(.03)	.40
42	Organised	2.66	.80	2.97	.91	(2.38)	(.02)	.34
49	Motivated	2.40	.90	2.68	.87	(2.00)	(.05)	.32

**AGE : Comparison of All Sixth Form with All Higher Education**

These comparisons showed twenty-two items in favour of HE students (one SS  $p < .01$ ) and ten for 6th Form students (yet three SS  $p < .05$ ).

**TABLE 12: STATISTICALLY SIGNIFICANT PERSONALITY VARIABLES**

	ITEM	6th FORM		HIGH ED		t	SS	F/X
		mean	SD	mean	SD			
19	Empathy	3.22	.70	2.99	.80	1.93	.05	.29
21	Integrity	2.86	.85	2.56	1.00	2.07	.04	.30
23	Confront	2.94	.67	2.69	.70	2.32	.02	.36
27	New Exper	3.43	.67	3.68	.53	(2.66)	(.01)	.47

To support this data, Effect Size (FX) were calculated and showed consistent and adequate levels. The full table of t-test results for Personality is listed in Appendix D.

**FACTOR ANALYSIS**

Factor Analysis is the science of finding those phenomena which show simultaneous and consistent variation under similar conditions. Tests which correlate highly with each other are probably measuring the same underlying ability and it is possible to group these under the label of a simplified 'factor'. Factor Analysis was chosen as the statistical

method for this study to indicate how many of these "simplified factors" can be extracted from the Personality variables, and the relative influence or 'loading' of each factor.

A principal components factor analysis was carried out on the results of the Personality variables. With a Varimax rotation and Kaiser Normalisation, four factors were extracted which accounted for 37% of the variance, and grouped the variables under the descriptive labels of:-

- Open-minded** (includes curious/inquisitive/intuitive/insight/original)
- Industrious** (includes motivated/self-disciplined/committed/determined)
- Independent** (includes free spirit/ambiguity/unconventional)
- Neurotic** (includes isolation/self-criticism/tension/introspection)

Since the pioneering work G. W. Allport (1937-64), factor analytic studies of general personality have yielded 5 factor solutions. Based on the Cattell 16 factor inventory (1986) these are:-

- 1 Neurotic
- 2 Extraversion
- 3 Agreeableness
- 4 Conscientiousness
- 5 Openness to experience

This investigation is concerned only with the creative aspects of personality, yet surprisingly the four factors extracted from this data, with a factor loading of greater than .50 still relate to factors existing in the general population.

This sample		General population	
F 1	Open-minded .....	F 5	Openness
F 2	Industrious .....	F 4	Conscientiousness
F 3	Independent .....	F 2	Extraversion
F 4	Neurotic .....	F 1	Neuroticism

No correspondence was found with Cattell's third factor of agreeableness, in fact with these students social and peer problems were a large element of the 'neurotic' factor.

Further factor analysis was carried out with the sample divided into groups by age, gender and ability. The same four factors emerged, with small variations.

**TABLE 13: ROTATED FACTOR MATRIX:  
Self-Assessed CREATIVE PERSONALITY  
32 INDIVIDUAL VARIABLES ALL STUDENTS n=194**

Factor 1 14% var "Open-minded"			Factor 2 10% var "Industrious"			Factor 3 8% var "Independent"			Factor 4 5% var "Neurotic"		
Item	Label	F/L	Item	Label	F/L	Item	Label	F/L	Item	Label	F/L
21	Integrity	.61	49	Motivate	.79	36	Free spirit	.64	31	Isolated	.78
41	Recognition	.60	29	Discipline	.77	47	Ambiguity	.54	20	Social Gp	.73
26	Curiosity	.56	42	Organise	.74	38	Unconven	.54	40	Critical	.57
34	Emotion	.56	32	Committ	.69	43	Own Rules	.44	22	Tension	.55
35	Intuition	.50	25	Determin	.57	27	New Exper	.42	45	Reflect	.49
37	Original	.47				23	Confront	.40			
44	Competen	.44				33	Play	.40			
28	Absorbed	.43				46	Influence	.36			
50	Out Stim	.41				24	Risks	.34			
19	Empathy	.38				30	Limits	.31			
39	Complex	.35									
40	Range	.34									

#### FACTOR LABELS

Item	Factor 1 "Open-minded"	F/L
21	I need to be considered honest, to have integrity .....	.61
41	I value recognition of my ability .....	.60
26	I am curious, inquisitive .....	.56
34	I often have intense feelings and emotions .....	.56
35	I am an intuitive person, with strong instincts and insight .....	.50
37	I place a high value on originality .....	.47

#### Factor 2 "Industrious"

49	I find it easy to motivate myself to work .....	.79
29	I have quite a lot of self-discipline .....	.77
42	I am well able to organise myself .....	.74
32	I have a strong commitment to my work .....	.69
25	I am determined and persistent .....	.57

#### Factor 3 "Independent"

36	I consider myself a free spirit .....	.64
47	I am tolerant of ambiguity .....	.54
38	I react positively to unconventional behaviour or dress .....	.54
43	I prefer to set my own rules.....	.44
27	I welcome new experiences .....	.42

Factor 4 "Neurotic"		
31	I frequently feel isolated from my social group .....	.78
20	I frequently distance myself from my social group .....	.73
40	My self-confidence is often undermined by self-criticism .....	.57
22	I frequently feel tension between myself and my peers .....	.55
45	I am often pre-occupied with my own thoughts .....	.49

#### ARTISTS v CONTROLS: Comparisons of Factors for ABILITY

ARTISTS			CONTROLS		
F1	"Industrious"	14% var	F1	"Industrious"	16% var
F2	"Open-minded"	10% var	F2	"Open-minded"	14 % var
F3	"Neurotic"	8% var	F3	"Independent"	10% var
F4	"Independent"	6% var	F4	"Neurotic"	7% var

The art group produced the same four factors as the overall students and which accounted for 38% of the variance. The control group also produced four factors, accounting for 49% variance; two of which (F1, F4) match F1, F3 of the art factors, and a further two (F2, F3) which could bear the same labels as F2 and F4 of the artists, but which have slightly different compositions. F2 in both groups could be labelled "Open-minded", but they have only three items in common.

F4 in the artists corresponds to F3 in the controls, and they are both labelled "Independent", yet two of the highest loadings (Range .67, and Play .55) in the control factor are not listed in the artist factor.

So there is apparently no great difference in the personality of artists and non-artists as described by the grouping of their characteristics as factors. Both groups have "Industrious" as their strongest factor, composed of identical elements. The other shared consistent factor is "Neurotic" which has Self-critical as the highest loading in the art group but which is missing from the control group. The only major difference appears to be in the content of the "Open" factor, which in the control group includes Emotion, Complexity, Integrity, and Empathy; none of which appear in the artist list. On the other hand the artists' factor included Intuition, Range of ideas, Absorbed and Play which are not listed by the controls.



## Factor 1 "Open-minded"

If openness is a key element in creativity, and art students are more creative than non-artists, then F1 should be bigger in the art group. In fact it is ranked only as F2 in both groups yet accounts for slightly more variance in the controls (14%) than in the artists (10%). On the raw scores of the 14 items which make up this factor, the art students rated themselves higher on 11 items, 4 at a level of SS  $p < .05$ .

Individual items common to this factor in both groups were:-

	Item	F/L		Mean Raw Scores		t-test SS Art / Con	F/X
		Art	Con	Art	Con		
26	Curious	.54	.66	3.33	3.25	.48	.12
37	Original	.56	.49	3.28	2.95	.01*	.46
41	Recognition	.52	.62	3.37	3.05	.01*	.46

Items particular to the art group:-

		F/L		Mean Raw Scores		SS	FX
		Art	Con	Art	Con		
35	Intuitive	.63		3.10	2.95	.15	.25
48	Range	.58		3.24	3.14	.35	.16
28	Absorbed	.45		3.16	2.86	.01*	.41
33	Play	.44		2.95	2.51	.00*	.73
23	Confront	.42		2.78	2.97	(.10)	.28
44	Competent	.39		3.45	3.26	.10	.27

Items particular to the Control group

		F/L		Art	Con	SS	FX
		Art	Con				
34	Emotion	.72		3.41	3.39	.84	.03
39	Complex	.72		2.76	2.81	(.73)	.06
21	Integrity	.56		2.76	2.70	.69	.07
19	Empathy	.43		3.12	3.14	(.83)	.03
50	Outside Stimulus	.40		2.90	2.68	.12	.25

The composition of these factors would seem to suggest that the basis of the art students' openness may be intellectual, whereas that of the non-artists may be more emotionally based.

## Factor 2 "Industrious"

This factor accounted for most of the variance in both groups, 14% in the artists and 16% in the controls. The composition of the factor was virtually identical in both cases, with

five items common:-

		F/L		Raw Scores		t-test SS	F/X
		Art	Con	Art	Con	A v C	
49	Motivated	.78	.81	2.63	2.46	.27	.17
42	Organised	.67	.82	2.83	2.88	.75	.06
29	Disciplined	.72	.76	2.85	2.67	.16	.22
32	Committed	.72	.73	3.27	2.97	.01	.43
25	Determined	.66	.54	3.28	3.21	.51	.11

and only the control group having separate items:-

44	Competent	.61	3.45	3.26	.10	.27
21	Integrity	.45	2.76	2.70	.69	.07

### Factor 3 "Independent"

This factor was unusual in that it accounted for less variance (6%) in the art group than it did in the controls (10%). There was however, considerable difference in the make-up of the factor in each group, with four items in common:-

		F/L		Raw Scores		t-test	
Item		Art	Con	Art	Con	SS	F/X
47	Tolerance of ambiguity	.70	.55	3.06	2.88	.08	.29
27	New experiences	.54	.53	3.55	3.49	.57	.10
36	Free spirit	.45	.55	2.88	2.90	.87	.03
46	Influence others	.47	.40	2.89	2.86	.82	.05

The artists had two distinct items:-

24	Intellectual risks	.56	3.05	3.09	(.74)	.06
38	Unconventional	.54	3.10	2.93	.20	.21

The control group had considerably more particular items:-

48	Range of interests	.67	3.24	3.14	.35	.16
30	Reject limits	.60	2.57	2.70	(.32)	.17
33	Play with ideas	.55	2.95	2.51	.00	.73
40	Self-critical	.44	3.15	2.84	.01	.43
43	Set own rules	.40	2.88	2.97	(.53)	.11
26	Curious	.41	3.33	3.25	.48	.12

### Factor 4 "Neurotic"

This again was a fairly consistent factor, accounting for virtually the same percentage of variance in both groups (8%, 9%) and with four major elements in common:-

		F/L	Raw Scores		SS	F/X
31	Isolated	.66 .78	2.58	2.28	.03	.35
20	Social group	.65 .79	2.41	2.26	.32	.17
22	Tension	.52 .54	2.66	2.65	.97	.01
45	Reflective	.42 .60	3.20	2.97	.05	.32

This time the artists had three particular items:-

40	Self-critical	.68	3.15	2.84	.01	.43
50	Outside stimulus	.40	2.90	2.68	.12	.25
21	Integrity	.40	2.76	2.70	.69	.07

Whilst the control group had only one:-

38	Unconventionality	.45	3.10	2.93	.20	.21
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Perhaps the real surprise in this factor is the absence of Item 40, Self-critical, from the control group, when it had the highest loading in the art group.

#### **MALES v FEMALES: Comparison of Factors for GENDER**

If creativity is gender free then there should be little difference between male and female artists; but there should be a difference between male artists and controls, and also between female artists and controls.

##### **Factor 1 "Open-minded"**

This factor accounts for much more of the variance (13%) in the males than in the females (6%) in the total. Only three of the items are common to both groups:-

		F/L		Raw Scores		SS	F/X
		Male	Fem	Male	Fem		
41	Recognition	.52	.60	3.23	3.29	(.59)	.09
21	Integrity	.62	.57	2.44	2.93	(.00)	.54
50	Outside Stimulus	.45	.37	2.77	2.87	(.44)	.12

Seven items were unique to the male group:-

26	Curious	.63	3.19	3.38	(.10)	.28
34	Emotional	.61	3.26	3.49	(.03)	.40
25	Determined	.54	3.04	3.40	(.00)	.57
35	Intuitive	.53	2.94	3.10	(.13)	.26
44	Competent	.52	3.31	3.44	(.28)	.19
48	Range of interests	.45	3.14	3.24	(.36)	.16
23	Confront	.40	2.74	2.90	(.15)	.24

Three items were particular to the female group:-

39	Complex	2.76	2.79	.61	(.79)	.05
32	Committed	3.07	3.23	.59	(.13)	.23
28	Absorbed	3.04	3.08	.50	(.74)	.05

## Factor 2 "Industrious"

These factors are almost identical in the gender comparison; with similar variance 11% and 10%, and five items in common:-

		Raw Scores		F/L		t-tests	
		Male	Fem	Male	Fem	SS	F/X
42	Organised	2.66	2.97	.76	.73	(.02)	.34
49	Motivated	2.40	2.68	.74	.68	(.05)	.32
29	Disciplined	2.73	2.82	.73	.76	(.44)	.12
32	Committed	3.07	3.23	.53	.63	(.13)	.23
25	Determined	3.04	3.40	.42	.68	(.00)	.57

and only one unique to the males:-

36	Free spirit	2.84	2.92	.48		(.56)	.10
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## Factor 3 "Independent"

This factor looks to be strongly female (15% var) compared to the male group at 6%; with all the male items also in the female lists:-

48	Range	3.14	3.24	.65	.50	(.36)	.16
38	Unconventional	2.94	3.11	.63	.40	(.19)	.21
27	New Experiences	3.54	3.52	.52	.58	.86	.03
33	Play with ideas	2.83	2.78	.47	.46	.63	.08
36	Free spirit	2.84	2.91	.40	.62	(.56)	.10

The female factor contained a further seven items:-

35	Intuition	2.94	3.11	.80		(.13)	.26
23	Confront	2.74	2.90	.62		(.15)	.24
26	Curious	3.19	3.38	.57		(.10)	.28
24	Intellectual risks	3.02	3.09	.50		(.56)	.10
46	Influence others	2.79	2.92	.49		(.27)	.18
47	Tolerate ambiguity	2.90	3.06	.46		(.11)	.26
37	Value originality	3.11	3.22	.44		(.38)	.16

with the surprising item 35 Intuition having the highest factor loading.

#### Factor 4 "Neurotic"

Again these two factors are virtually identical, with variances at 8% and 9%, and five

common items:-

		F/L		Raw Scores		SS	F/X
		Male	Fem	Male	Fem		
20	Social group	.75	.69	2.41	2.32	.49	.11
31	Isolated	.73	.75	2.53	2.46	.60	.08
40	Self critical	.59	.59	2.99	3.10	(.38)	.14
45	Reflective	.51	.59	3.16	3.11	.70	.06
22	Tension	.46	.54	2.80	2.55	.05	.28

Males have only one separate item:-

41	Recognition	.40		3.23	3.28	(.59)	.09
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Females have only one separate item:-

50	Outside stimulus		.36	2.77	2.87	(.44)	.12
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#### SIXTH FORM v HIGHER EDUCATION: Comparison of Factors for AGE

Hypothesis **P7** was that there should be no difference between the groups, however, as the HE students have all been selected for full-time art courses they should display more creative characteristics than the 6F group, some of whom would not achieve that level. If there is no real difference, then either the element of age is not an influence, or creativity is not a major criterion in the selection of students for HE courses.

#### Factor 1 "Open-minded"

This factor shows more variance in the sixth form group (F1 15%), than in the HE group (F3 6%); with 4 of the items common to both groups:-

		F/L		Raw Scores		t-tests	F/X
		6F	HE	6F	HE		
21	Integrity	.66	.63	2.86	2.56	.04*	.30
34	Emotional	.43	.62	3.36	3.46	(.35)	.16
44	Competent	.48	.56	3.36	3.43	(.57)	.10
19	Empathy	.42	.40	3.22	2.99	.05*	.29

Six items were particular to the sixth form group:-

26	Curious	.65		3.28	3.32	(.73)	.05
37	Original	.56		3.17	3.18	(.93)	.01
39	Complexity	.56		2.78	2.77	.88	.01
48	Range	.51		3.17	3.27	(.32)	.16
35	Intuition	.42		3.06	3.03	.77	.05
33	Play with ideas	.40		2.74	2.90	(.09)	.28

Four items were only in the HE group:-

32	Committed	3.16	3.18	.59	(.85)	.03
50	Outside stimul	2.78	2.90	.55	(.38)	.15
28	Absorbed	3.04	3.09	.42	(.64)	.08
40	Self critical	3.05	3.04	.57	.97	.01

## Factor 2 "Industrious"

This factor is almost identical in content in both 6th Form and HE groups, but accounts for much more of the variance in the HE group (15% to 8%). The five principal components of this factor are common to both groups:-

		Raw Scores		F/L		t-tests	
		6F	HE	6F	HE	SS	F/X
29	Self-discipline	2.82	2.74	.77	.73	.47	.10
49	Motivated	2.52	2.65	.81	.76	(.36)	.15
42	Well organised	2.83	2.87	.68	.76	(.80)	.05
32	Committed	3.16	3.18	.71	.60	(.85)	.03
25	Determined	3.32	3.16	.65	.57	.14	.23

Only one item is unique to the HE group:-

28	Absorbed	3.04	3.09	.47	(.64)	.08
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## Factor 3 "Independent"

This factor again accounts for more of the variance in the sixth form group (11% to 7%), but perhaps more interesting is that in the HE group this factor is bi-polar. Four items are common:-

		Raw Scores		F/L		t-tests	
		6F	HE	6F	HE	SS	F/X
23	Confront hostility	2.94	2.69	.53	.40	.02	.36
46	Influence others	2.88	2.87	.52	.50	.90	.10
27	New experience	3.43	3.68	.52	.54	(.01)	.47
24	Take intellect risks	3.00	3.16	.43	.64	(.11)	.24

Four items are particular to the sixth form group:-

35	Intuition	3.06	3.03	.52		.77	.05
36	Free spirit	2.89	2.87	.68		.84	.03
43	Set own rules	2.89	2.93	.52		(.81)	.04
47	Tolerate ambiguity	2.96	3.06	.49		(.37)	.14

Within the HE group only one item (39 Complexity) is unique, but four items have

negative factor loadings:-		F/L HE	6F	HE	SS	F/X
39	Complexity	.41	2.78	2.77	.88	.01
31	Isolated	(.72)	2.44	2.54	(.45)	.12
20	Social group	(.66)	2.31	2.43	(.42)	.13
40	Self-critical	(.50)	3.05	3.04	.97	.01
22	Tension	(.35)	2.59	2.75	(.23)	.18

#### Factor 4 "Neurotic"

Whereas all the other factors have retained their labels even when the sample have been divided into different groupings, the "Neurotic" factor, which appears strongly (6% var) in the sixth form group appears only in the HE group as the bi-polar element in factor 3.

The extra factor in the HE group is the second which accounts for 10% variance. The constituent elements are largely those already associated with the factors of open-minded and independent.

#### FACTOR MATRIX:

Matrix showing the consistency of the four 'Personality Factors', by comparing the factor loadings within each group. Items are ranked by the value of the loading for "All students"

#### Factor 1 "OPEN-MINDED"

		All						
Group		Stud	Arts	Cont	Mal	Fem	6F	HE
Factor no		F1	F2	F2	F1	F4	F1	F3
% variance		14	10	14	13	6	15	10
21	Importance of integrity	.61	.38	.56	.62	.57	.66	.63
41	Desire for recognition	.60	.52	.62	.52	.60	.62	.47
26	Curiosity	.56	.54	.66	.63	.16	.65	.23
34	Emotional intensity	.56	.33	.72	.61	.17	.43	.62
35	Intuitive, insightful	.50	.63	.39	.53	.08	.42	.27
37	High value of originality	.47	.56	.49	.23	.53	.56	.02
44	Need for competence	.44	.39	.33	.52	.53	.48	.56
28	Absorbed by work	.43	.45	.19	.41	.50	.35	.42
50	Looks for outside stimulus	.41	.19	.40	.45	.24	.30	.55

## Factor 2 "INDUSTRIOUS"

		All						
		Stu	Art	Con	M	F	6F	HE
	Factor no	F2	F1	F1	F2	F2	F3	F1
	% variance	10	14	16	11	10	8	15
49	Motivated	.79	.78	.81	.74	.68	.81	.76
29	Self-disciplined	.77	.72	.76	.73	.76	.77	.73
42	Well organised	.74	.67	.82	.76	.73	.68	.76
32	Committed	.69	.72	.73	.53	.63	.71	.60
25	Determined	.57	.66	.54	.42	.68	.65	.57

## Factor 3 "INDEPENDENT"

		F3	F4	F3	F4	F1	F2	F4
	Factor no	8	6	10	6	15	11	7
	% variance							
36	Free Spirit	.64	.45	.55	.40	.62	.68	(.03)
47	Tolerant of ambiguity	.54	.70	.55	.65	.46	.49	.33
38	Unconventional	.54	.54	.29	.63	.40	.25	.16
43	Prefers to set own rules	.44	.33	.40	.07	.46	.52	(.08)
27	New Experience	.42	.54	.53	.52	.58	.52	.54
23	Faces up to hostility	.40	.37	.36	.17	.62	.53	.40
33	Often plays with ideas	.40	.25	.55	.47	.46	.32	.07
46	Influence on others	.36	.47	.40	.36	.49	.52	.50
24	Take intellectual risks	.34	.56	.23	.32	.50	.43	.64

## Factor 4 "NEUROTIC"

		F4	F3	F4	F3	F3	F4	(F4)
	Factor no	5	8	7	8	9	6	10
	% variance							
31	Often isolated from peer	.78	.66	.78	.73	.75	.77	(.72)
20	Distances self from peer	.73	.65	.79	.75	.69	.67	(.66)
40	Self-critical	.57	.68	.19	.59	.59	.49	(.50)
22	Frequent social tension	.55	.52	.54	.46	.54	.57	(.35)
45	Reflective, introverted	.50	.42	.60	.51	.59	.58	(.20)



## DISCUSSION:

The hypotheses for this series of tests were principally that there should be personality differences between artists (creatives) and non-artist controls (less creatives). The tests were framed to compare the creative aspects of student personality on the basis of `Ability`, `Gender`, and `Age`. Though the initial statistical tests failed to provide any strong evidence for this, Discriminant Analysis showed that these variables could differentiate artists from non-artists with considerable accuracy, and t-tests on the individual items showed which aspects of personality were the best indicators. In general terms it would appear that the differences between the groups lie in specific items rather than a single overall measure.

Art students appear to be more committed and absorbed in their subject, they like to play with ideas, and value originality, they are reflective, self-critical, often withdrawn from their peers, and need recognition of their abilities. however, they are not necessarily more open-minded and independent than other students, which is quite surprising given the general stereotyped view of art students.

Factor analysis of these items failed to produce substantial differences in the factors of the two groups. It appears, however, that these groups can have the 'same' factors, though the composition of the factors does differ. For example:

Open-minded Factor		
ARTISTS only	COMMON	CONTROLS only
Items	Items	Items
intuitive	curious	emotional
range	original	complexity
absorbed	recognition	integrity
play with ideas		empathy
confront		outside stimulus
competent		

The composition of these factors would seem to suggest that the basis of the artists' openness may be intellectual whereas that of the controls may be more emotionally based.

There was also considerable difference in the composition of the **Independent Factor**, with 'willingness to take intellectual risks' and 'unconventional' only in the artists' factor,

and the control group including the emotionally insular elements of 'self-criticism', 'sets own rules' and 'rejects others' limits'.

These results indicate that with regard to the specific hypotheses:

**P1 "No overall single measure of personality (ie the total score on the 32 variables) will distinguish artists from non-artists" :-**

The 2 tailed t-tests on the totalled personality scores failed to discriminate between artists and controls at a statistically significant level, however, the same items when analysed by Wilkes' Lamda were able to differentiate the groups with an accuracy of 78 - 84%.

**P2 "On individual measures of creative personality, art students will score significantly higher than non-art controls"**

The results of "2 tailed t-tests" on the 32 individual variables showed that the artists produced higher mean scores on 25 items (8 at a level of SS  $p < .05$ ), compared to 7 items scored in favour of the controls (none SS). The 8 positive items were:

		t	SS
28	Absorbed	2.62	.01
31	Isolated	2.15	.03
32	Commitment	2.77	.01
33	Play with ideas	4.54	.00
37	Originality	2.87	.01
40	Self-critical	2.48	.01
41	Recognition	2.85	.01
45	Reflective	1.90	.05

**P3 "Art student "Factors" will differ from those of controls".**

This hypothesis is certainly not proven, with the same four factors being extracted for both groups, though there were differences in the content of the factors.

**P4 "Art students will show more independence and openness."**

This hypothesis was also not proven by factor analysis, with both groups producing factors which held the description "open-minded" and "independent". Again the content of the factor differed in emphasis, with the artists' factor having 'intuition', 'range of interests' and 'originality' as its main components; and the control group having 'strong emotions' and 'preference for complexity' as prime items.

### "Open-minded" Factor:

		Art students					
		Raw score					
	Variable	F/L	Mean	SD	t	SS p<	F/X
35	Intuition	.63	3.10	.71	1.43	.15	.25
48	Range of Interests	.58	3.24	.65	.95	.35	.16
37	Originality	.56	3.28	.73	2.87	.01*	.46
26	Curious	.54	3.33	.74	.71	.48	.12
41	Need for recognition	.52	3.37	.68	2.85	.01*	.46
		Non-art Controls					
	Variable	F/L	Mean	SD	t	SS	F/X
34	Emotional	.72	3.39	.62	.20	.84	.03
39	Preference for complex	.72	2.81	.83	(.34)	(.73)	.06
26	Curious	.66	3.25	.69	.71	.48	.12
41	Need for recognition	.62	3.05	.69	2.85	.01*	.46
21	Integrity	.56	2.70	.91	.40	.69	.07

### "Independent" Factor:

This was also present in the extractions of both groups, with "new experience", and "free spirit" common themes with similar factor loadings and raw scores; and "tolerance of ambiguity" present but with a higher loading in the art group, and a mean raw score difference at  $p < .08$ . Again there were different variables at the top of each factor, with the artists having "ambiguity", "intellectual risks" and "unconventional"; and the controls having "range", "reject limits" and "play with ideas" as their prime variables.

		Art students					
	Variable	F/L	Mean	SD	t	SS	F/X
47	Tolerance of ambiguity	.70	3.06	.70	1.74	.08	.29
24	Intellectual risks	.56	3.05	.67	(.33)	(.74)	.06
38	Unconventional	.54	3.10	.78	1.30	.20	.21
27	New experience	.54	3.55	.64	.58	.57	.10
36	Free spirit	.54	2.88	.77	(.16)	.87	.03
46	Influence others	.47	2.89	.82	.23	.82	.05
		Non-art controls					
	Variable	F/L	Mean	SD	t	SS	F/X
48	Range of interests	.67	3.24	.65	.95	.35	.16
30	Reject other limits	.60	2.70	.80	(1.00)	(.32)	.16
33	Play with ideas	.55	2.51	.60	4.54	.00*	.73
47	Tolerance of ambiguity	.55	2.88	.63	1.74	.08	.29
36	Free spirit	.55	2.90	.70	(.16)	(.87)	.03
27	New experience	.53	3.49	.60	.58	.57	.10

This factor accounted for 10% variance in the controls compared to only 6% in the artists.

**P5 "High or low scores on these personality items will predict membership of either artist or control groups."**

The results of the Discriminant Analysis of these scores did show an accurate (78/84%) prediction of group membership.

**P6 "There will be few gender differences."**

Historically, creativity is male dominated, and this hypotheses was framed to propose that the female students would produce equivalent scores. In fact their mean scores were higher on 26 of the 32 items, with six items on the t-tests having a level of statistical significance  $p < .05$ ; showing the females to be more empathetic and emotional, yet more determined, motivated and organised, with a need for integrity.

Also the factor analysis of the two groups showed two identical factors, Industrious and Neurotic, with the males more "open-minded" whilst the females were more "independent". This independence is shown as possessing intuition, willing to confront hostility and take risks, having a wide range of interests, being curious, valuing new experiences and being a free spirit. Female art students seem to have the element of independence to a much higher degree than the non-art females.

**P7 "There will be no difference in comparison for age."**

It was assumed that if there was any difference in score between the age groups it would be in favour of the HE students. The factor analysis was inconclusive on this point, as was analysis by t-tests of the raw scores of the two groups, which showed that on the 32 items ten scored in favour of the 6th Form with only three at a statistically significant level:

	Item	6F	HE	t	SS
19	Empathy	3.22	2.99	1.93	.05*
21	Integrity	2.86	2.56	2.07	.04*
23	Confront	2.94	2.64	2.32	.02*

Another 15 items produced virtually identical scores, and seven items scored in favour of the HE students, with only one statistically significant:

27	New Exper	3.43	3.68	(2.66)	(.01)*
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## **4.53 COGNITIVE ABILITIES**

### **A SPATIAL ABILITY**

In the representation of space in art by school-children, several factors are obvious to all art teachers. Primary school children have no "need" of or interest in the illustration of "real" or "perspective" space, objects exist in their own, or the child's, time and space, whereas secondary pupils as adolescents with the addition of peer and adult pressure, need to demonstrate control of 3D space in visual terms. Problems of size, scale, distance, and the relationship of objects all have to be resolved and expressed on the 2D picture plane.

Some find this control easy, and at an early age, some find it difficult to grasp, and some never do. The higher ability "spatial" pupils are quickly labelled "good" at art, and "show potential", the lower ability strugglers have to work much harder in other aspects of their art to achieve any recognition.

Yet the idea of 3 dimensional representation is a cultural rather than a cognitive issue, and the development of a formal system for the illustration of space, or objects in space, was an invention of the Italian Renaissance, developing out of the architectural experiments of Fillipo Brunelleschi, and formalised by Alberti. Prior to this the illusion of space was not always a requirement for painting. The Egyptians, for example, who in other areas of their culture showed remarkable spatial control, showed no desire to make it a requirement of their art.

The possible importance for this research of the ability to control and generate spatial elements was expressed by Janet Daley (1987):-

"... understanding the ways in which we construe the world of objects and their spatial relations, is essential to an account of creativity in art ..."

She goes further by claiming that "innovation" in the visual arts IS "the envisaging of as yet unmade objects or non-existent spatial relationships".

In considering Spatial Ability (SA) in the context of this study we must first identify whether there is a discrete capacity of SA and if so how do we identify and measure it.

This question was raised by El Koussy in 1935 who first identified Spatial Ability as a separate factor in intelligence. Fifty years later the issue was reviewed again by Howard Gardner, a psychologist with interests in both education and the arts, who linked spatial abilities with vision and imagery. So instead of isolating SA as a separate entity, he fixed it as an extension of visual perception leading to a particular mode of thinking. But does this emphasis on the visual idea just confuse the issue? In Gardner's case it does because he follows "... spatial intelligence ... grows directly out on one's observation of the visual world" with "... spatial intelligence can develop ... even in an individual who is blind".

If we define SA as the ability to interact with our physical environment then SA becomes the interpretive element in the sensation/perception/cognitive chain, and it is not just a visual experience. Each of our senses carries spatial information, used in different ways and to different degrees by different individuals and species. It seems a reasonable assumption that:

eagles have exceptional visual-spatial abilities

moles have exceptional kinaesthetic-spatial abilities

whales have exceptional audio-spatial abilities.

Humans have all these senses to a lesser degree and have also developed non-visual 'propositional' spatial description, giving us the ability to handle spatial concepts without direct sensory perception. However, this study concerns the visual aspects of the creative arts, and for the measurement of spatial ability in a visual context it is necessary to start from a perceptual viewpoint. One of the great virtues of the visual spatial tests is that they have a clear finite stimulus and a simple measurable outcome. However, these tests measure only the speed or accuracy of the response, not the nature of the cognitive processes involved.

Studies of visual perception invariably start with the structure of the eye, the nature of vision, and the physics of light; then they move on to study the brain. The eye collects an impression of the external world which the brain interprets. This duality has its roots deep in philosophy.

Current thinking is that interpretation is an inextricable part of sensation; the brain does not just analyse images, it actively construct a visual world; and it is difficult to look at any work in the visual arts without concluding that the producer possesses exceptional 'visual imagination', and does construct his own visual world.

The idea of highly developed mental imagery is nothing really new, it was discussed by Gustav Fechner as early as 1860, and by Francis Galton who in 1928 reported experiences of visualisation and mental imagery in famous scientists. These anecdotal stories of scientific problems solved by visual imagery are legion, from Kekulé to Watson, Crick, Penrose and Huffman (qv).

The thesis that people can generate mental images and rotate them in mental space has many supporters, particularly Paivio, Shepard and Kosslyn (qv) who claim that information is stored in the brain as mental images, and that manipulation of these images is a basic cognitive capacity.

For the purpose of this study art is defined as graphic pictorial representation, and as a means of identifying the accuracy of a response to this form of image, and the mental manipulation of it, Spatial Ability Tests are as good a measure as we have.

The main problem with the study of spatial ability (SA) is that there is no one theory of the processes that fit the known evidence. Add to this the multiple interpretations of the concept SPACE, from the Piagetean 'practical, representational, and conceptual' spaces; and the scientific 'finite, absolute, relative and Euclidean' spaces; to the philosophical, psychological, physical and mathematical spaces, and we have some idea of the problem. And this even before the addition of the cognitive aspects of 'ability'.

Not only is there no 'unified' theory which accounts for spatial ability, but even the components that make up this concept, vision, perception, neurobiology, visualisation, personality, etc are subject to their own internal theories.

Spatial Abilities (SA) are usually described as the abilities to rotate an object, to understand imaginary movement, or to look at shapes from another point of view. Such theories treat SA simply as an undefined factor or variable, then attempt to produce

devices for measuring these abilities, assign scores to individuals, and indicate their level of ability. These tests may be adequate for predicting performance differences between individuals, but do little to explain what subjects are actually doing when they solve a spatial problem.

There is no convenient test or single measure. However, people do get around their environment and some people cope better than others with these spatial problems.

Though how much of this difference is due to defects/variations in vision, perception, neural networks, mental modelling or personality; and how much is due to the different combinations of these elements, which are themselves not mutually exclusive, is still a matter of great debate.

Kelly (1928) found evidence for two sub-factors of spatial ability in the under 10s -

- a) perception and retention of geometric forms and
- b) mental manipulation of shapes.

Similar sub-factors in older pupils were reported by Taylor (1960). El Koussy (1935) concluded that there was no evidence for a group of factors running through the whole field of spatial perception, but some tests threw up a factor 'k' which "... receives a ready psychological explanation in terms of visual imagery". He describes this factor as the ability to use visual/spatial imagery. Macfarlane-Smith (1928) refined this theory after testing 12/14 year old pupils as "... the ability to form and retain an exact impression of shape or pattern". Guilford and Lacey (1947) isolated 3 spatial factors, plus a visualisation factor V2 which appeared in their tests of mechanical reasoning, paper folding, surface development, and descriptions of cubes, and which they identified with El Koussy's 'k'. Thurstone (1950) listed 3 visual/spatial factors:

- S1 the ability to recognise an object seen from different angles,
- S2 the ability to imagine the movement of the parts of a configuration,
- S3 the ability to think about spatial relations involving the body orientation of the observer (kinaesthetics).

Michael, Guilford, Fruchter and Zimmerman (1957) described three factors:

- 1 SR-O Spatial relations and orientation.  
The ability to comprehend an arrangement of elements with the observer's body as a frame of reference.



- 2      V2    Visualisation.  
Mental manipulation of objects in a sequence of movements, rotation, turning, twisting or inverting.
- 3      K    Kinaesthetic imagery.  
A left/right discrimination with respect to the location of the human body.

These authors, in describing the factors as being conceptually independent, admitted that there was likely to be correlation between them. Macfarlane Smith, in his analysis of this study, found that there was a strong case for considering Orientation SR-O and Visualisation V2, as sub-factors of a broad spatial factor.

The 1950s saw considerable research into the relationship between spatial ability and personality. Though these ideas were explored as early as the 1920s by Freyd and Bingham, the volume of research was increased dramatically. Cattell (1948-1957), Burt (1949), P. E. Vernon (1949-1953), Burns (1959), Macfarland Smith (1952), Roe (1953), Witkin (1954-1962), Drevdahl (1955), Eysenk (1957), Hebron (1957), Semeonoff and Trist (1958), and French (1959), all explored these issues and all found some relationship between spatial ability and some aspect of personality, however the evidence is in the main inconclusive.

Further investigations into the relationship between perception and personality were carried out by H. A. Witkin and his colleagues in 1954/62/78, based on Werner's (1948) organismic theory of development. Combining the results of visual perception tests (usually 'Rod and Frame', and 'Embedded Figures') with TAT and Rorschach personality tests, they discriminated two groups of adult subjects at the polar extremes of a continuous distribution with the majority lying in between. One group which showed passivity, anxiety, and low self-esteem, were labelled by Witkin as "Field Dependent"; - needing to cling onto the external visual environment. The other group showed much more independence and self-confidence, and were labelled "Field Independent":- more able to rely on their own bodily sensations.

Witkin then extended his research into children, and found that 'field independence' tends to increase with age, and that these children show a greater capacity for active analysis

and for imposing their own structure on perceptual tasks.

R.W.Gardner and his associates (1959/60), in their research into perception and cognition, identified a factor which they labelled "Field Articulation". This contained both the Witkin factors, but under the description of 'selectiveness of attention' as opposed to the passive acceptance of what is given.

A number of more recent studies, Bloomberg (1971/76), Noppe and Gallagher (1977), have linked Field Independence to creativity principally through the correlation of scores of FI and Divergent Thinking tests. Further research by Witkin and his associates has revealed other links to aspects of creativity as identified by other workers, ie

Field Independents rely on:

- an internal frame of reference
- self-defined goals
- intrinsic reinforcements
- more objective analysis of problems.

Subsequent "spatial" research diversified considerably, yet became more specialised, with the emphasis on the testing of tighter, more specific elements, or on the formulation of 'global' theories. These studies also incorporated advances made in other areas of science, ie optics, psychology, neural networks, information processing, and artificial intelligence. A further dimension of SA in the domain of the deaf was reported by Oliver Sacks (1989) who was astonished by the ability of deaf people to translate spatial patterns of hand movements into language:- (see also the work of Bellugi (1987) Appendix 4.10)

"Sign is language....based in the left hemisphere despite its spatial organisation, suggests that there is a representation of 'linguistic' space in the brain, completely different from that of ordinary 'topographic' space."

"Sign is seen as fully comparable to speech....but with the additional powers of a spatial and cinematic sort - at once a most complex expression and transformation of thought." p89.

"The cracking of this enormously complex 4D structure may need the most formidable hardware, as well as an insight approaching genius. and yet it can also be cracked effortlessly, unconsciously, by a 3 year old signer." p90.

Studying the diversity of data and theories produced by the volume of research into the fields of sensation and perception is a reminder of the observation by Hurvich (1965) that visual literature is an area of many laws and little order.

Ultimately our picture of 'reality' is based on our individual or collective beliefs, either religious or scientific, faith or empiricism. And as space is the reality, our response to concepts of space is a major influence in our lives. Janet Daley (1987):

"... the imaginative manipulation of objects in space and time is a condition of all intelligible human experience."

## RESULTS:

There are many simple and effective commercial tests available for the measurement of aspects of spatial ability. For this investigation the DAT version was selected (Appendix 4.6). It was accessible, entirely visual, with only the briefest simple verbal instructions; it transposed easily to the format of the student questionnaire; it was pitched at the right level for this population sample; it was easy to mark and produced a range of responses. The test requires the subject to look at a line drawing of a 3D geometric solid, then select from a set of four alternatives, the shape which represents the first object from another viewpoint. This requires the subject to hold an image in the mind and rotate it so that the shape can be superimposed on others to find the fit. That is the assumption of the test, however it can only measure the outcome not the process.

Raw scores on 13 test items were totalled and then expressed as percentages; two-tailed t-tests were then conducted on the sub-group means.

**TABLE 14 . SPATIAL ABILITY: t-tests ANALYSIS of RESULTS by GROUPS**  
n =194

ABILITY	Mean ARTISTS	SD ARTISTS	Mean CONTROLS	SD CONTROLS	t	SS
All Artists (129)	52.01	31.25			1.21	.23
All Controls (65)			46.62	24.53		
Male Artists (54)	55.52	30.41			.02	.98
Male Controls (23)			55.35	21.51		
Female Artists (75)	49.48	31.81			1.34	.18
Female Controls (42)			41.83	25.99		

GENDER	M A L E S		F E M A L E S		t	SS
	Mean	SD	Mean	SD		
All Males (77)	55.47	27.91			2.05	.04*
All Females (117)			46.74	29.66		
Male Artists (54)	55.52	30.41			1.08	.28
Female Artists (75)			49.48	31.81		
Male Controls (23)	55.35	21.51			2.19	.03*
Female Controls (42)			41.83	25.99		
AGE	6th F O R M		H I G H E D			
	Mean	SD	Mean	SD		
All 6 Form (109)	51.39	28.08			.64	.52
All Higher Ed (85)			48.68	30.73		
6 Form Artists (74)	56.38	30.16			1.86	.06
HE Artists (55)			46.13	32.01		
6 Form Controls (35)	40.83	19.56				
HE Controls (30)			53.37	28.14	(2.11)	(.04)*

The specific hypotheses for this test were:-

- C 2** "That art students will score significantly higher on the DAT spatial test".  
**C 4** "There will be a high correlation between scores on the DAT spatial test and the results on the variables which relate directly to creativity."  
**C 6** "That Spatial Ability is not Age related after 16 years".  
**C 7** "That Spatial Ability is not Gender related after 16 years".

#### **ABILITY: Artists v Controls**

With regard to hypothesis **C 2**, the artist group (mean 52) did score higher than the non-art controls (mean 47), a difference that was not statistically significant  $p < .23$ . However, there was a significant difference at the .01 level, between the 6F artists (56) and the 6F controls (41), whereas the difference was in the opposite direction for the HE artists (46) versus the HE controls (53). These differences seem to reside in the low scores of the female members of these groups. The male artists (56) did outscore the male controls (55) though this result lacks any statistical significance  $p < .98$ ; whereas between the

female groups, the artists (50) still outscored the controls (42) but this time the difference is only significant at the level of  $p < .18$ . Whereas these results appear to support hypothesis C 2, with the artists scoring higher than the non-artists in all the groups; in reality the spatial ability of art students as measured by this test did not reach the expected high level. SA is apparently less influential in graphic art than was first thought, and therefore perhaps less important for creativity.

In an attempt to further clarify the situation, the results were split into two groups, High Scorers ( $>55$ )  $n = 72$ , and Low Scorers ( $<45$ )  $n = 83$ . t-tests on these groups, however, served only to confuse the situation, with the high scorers having no significant correlations and the low scorers correlating with the same variables (Divergent, Culture) as the original art groups.

#### **GENDER: Male v Female**

As already reported, the influence of gender lay in the low scores of the female control group. Though the male artists (56), out-scored their female counterparts (50), the result was not significant ( $p < .28$ ); whereas the difference between the male (55) and female (42) controls was significant at the .03 level.

**TABLE 15. GENDER GROUP CORRELATIONS between SPATIAL ABILITY and "11 VARIABLES"**

			r	p<
Male art students:	Spatial with	Divergent Thinking	.30	.04
		Culture Quiz	.46	.00
Female art students:	Spatial with	AvOGrade	.23	.07
		Originality	.26	.05
		Culture Quiz	.44	.00
		Perspective (in OIP)	.31	.02
Male controls:	Spatial with	SES	.59	.00
		Originality	(.66)	.00
Female controls:	Spatial with	SES	.39	.01
		AvOGrade	.40	.01

### **AGE: 6th Form v HE**

The hypothesis **C 6** was that age would not make a difference to the scores, and this was supported by the results. Overall, the older HE students (49) did not score higher than the younger sixth formers (51) . Within the art groups the 6F (56) scored more highly than the HE (46), significant at the .06 level; balanced by the opposite results from the control group where the low scoring of the 6F (41) against HE (53) produced a difference significant at the level of  $p<.04$ .

### **Correlations between Spatial Ability and Eleven Variables:**

			r	p<
<b>6 Form</b>	Spatial with	Originality	.37	.01
		Culture Quiz	.45	.00
		Creativity Factors	.34	.02

Within the **HE** group of students there were no statistically significant correlations between Spatial Ability and any of the other variables.

The results of this experiment in the testing of spatial ability supported the hypotheses that age and gender do not contribute very much to any difference in scores; but offer only a little support to the idea that spatial ability as measured by this test is an element in creativity.

Within the art group only the females produced a significant correlation  $r=.26$  with one of the `creative` variables Originality ( $p<.05$ ); within the controls the males also produced a strong negative correlation (.66) with Originality, significant at the level of  $p<.00$ .

Both art groups produced weak negative correlations with the variable of Creative Personality (male .11, female .16).

#### **4.53 COGNITIVE ABILITIES:**

##### **B ORIGINAL IMAGE PRODUCTION**

The ability to generate and manipulate visual images is a basic cognitive skill. The ability to do this well is the essence of creative thinking within the domain of the visual arts. The identification of this faculty, and its development through training, is one of the prime aims of art education. The normal procedure is to identify producers of quality work, by the subjective choice (through experience) of the teachers, and to nurture this talent by encouragement. This system has worked fairly well for generations, and has resisted all attempts at objective formalisation. Evaluation criteria are decided by consensus, and grading is carried out by 'association' or comparison; with surprisingly consistent results. No attempt ever seems to be made to differentiate 'art' ability from 'creative' ability. Built into all art assessment is the tacit assumption that every mark made by a child is original and therefore must be creative. The sheer effectiveness of this system seems to have hindered the development of a more objective evaluation process; if it works well, why fix it?

Perhaps the government has the right idea, by omitting the word creativity from the text of the national curriculum; offering instead five main aims of art and design as developing the powers of:-

- a - communication
- b - self-expression
- c - intuition
- d - analysis
- e - synthesis

The attainment targets of Key stages 1, 2, 3 are based on 'the communication, expression, and presentation in visual form' all that the pupil can 'observe', 'remember', and 'imagine'; and the criteria for a GCSE Grade 'A' are listed as "... high quality of personal perception and imagination". Obviously, a case can be made out for a creative element in all these items, but again there is an opt-out clause, "... internal assessment is retained as the

teacher is best placed to assess the 'process' as well as the product."

In tertiary education a frequent comment by students is "... we are only as creative as our tutors allow' if we want good grades, we follow their 'opinions, advice, direction, instructions'. So we are only creative within their parameters ... anyone who rejects or pushes outside their opinions is in trouble."

However, within the context of this investigation, pure subjectivity simply will not work. If the creative aspects of art work are to be measured, they must first be identified and isolated. As we have creative writers and musicians as well as artists, we should be able to separate the creativity from the words, sounds and images. Even if they are the blossom, leaves and fruit of the same creativity tree. Defining those aspects of creativity which are relevant to the visual arts and describing criteria for their evaluation are the essential first steps. The problem then arises of devising a test which will illuminate and measure these criteria. This test must:-

- a. stimulate a creative visual response
- b. distinguish creativity from art ability
- c. have a firm theoretical foundation
- d. have meaningful criteria
- e. be relatively easy to administer
- f. be easy to evaluate/mark
- g. be relatively culture free (there are often different cultures operating within the classroom).

The work of Hans Jellen and Klaus Urban (1989) offered an apparent immediate solution.

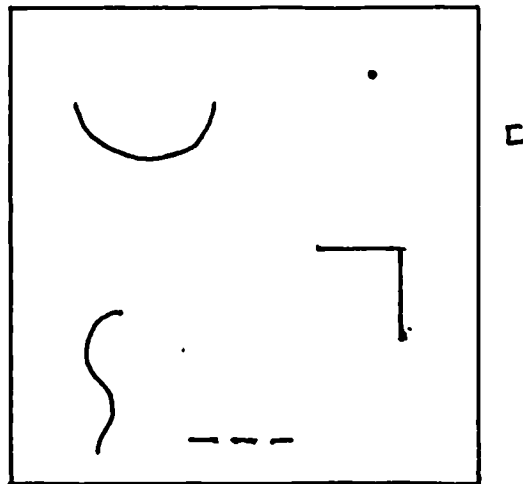
Following up an idea from the Torrance TCT, they devised a drawing test which would:-

"...NOT measure drawing skills or artistic talent(s)  
... the instrument's variables measure only creative potential ..."

The instrument was a drawing task; a square drawn on a blank sheet with five incomplete 'figural fragments' inside, and one smaller item outside.



**Test sheet for Jellen/Urban TCT-DP**



**The subjects were required to complete the drawing:-**

**"... giving them the freedom to create something novel or unique that is satisfying to them."**

**Jellen and Urban claimed that their test meets all criteria listed above, and in particular was culture and gender fair, and that it would:-**

**"... assess creative potentials in most age and ability groups from various educational, socio-economic, and cultural backgrounds."**

**The cross-cultural aspect of this project seemed to be the major objective of the research, and in their lengthy and detailed report, they claimed considerable success in this area; despite:-**

**"... we had to call on graduate students ... to interpret ... symbols used in numerous student drawings."**

**"Zulu, Indonesian, and Chinese students needed initial encouragement, assurances and 'guidance' to get started."**

**" ... children from highly industrialised countries scored consistently higher ... than children from developing nations."**

**"Nationally speaking, stereotypical utilization of the (stimulus) became more culture-bound."**

**Nevertheless, the most relevant aspect of the Jellen/Urban research for this investigation was their attempt to identify and measure graphic creativity, which was based on their**

adoption of the Carl Rogers' (1954) theory of creativity:-

" ... the emergence in action of a novel relational product, growing out of the uniqueness of the individual on the one hand, and the materials, events, people or circumstances of his life on the other."

## MARKING SCHEME

They bolted on a cognitive dimension, claiming that their subjects were composing available information with data from experience or imagination, synthesising all parts into a theme or holistic 'Gestalt', and communicating this creative product to others. They then "conceptualised a set of eleven criteria" for the evaluation of the drawings:-

- 1 Continuations
- 2 Completions
- 3 New Elements
- 4 Connections
- 5 Theme
- 6 Boundary-breaking A
- 7 Boundary-breaking B
- 8 Perspective
- 9 Humour
- 10 Unconventionality
- 11 Speed

With these evaluation criteria, and the theoretical underpinning of Rogers, both researchers were:-

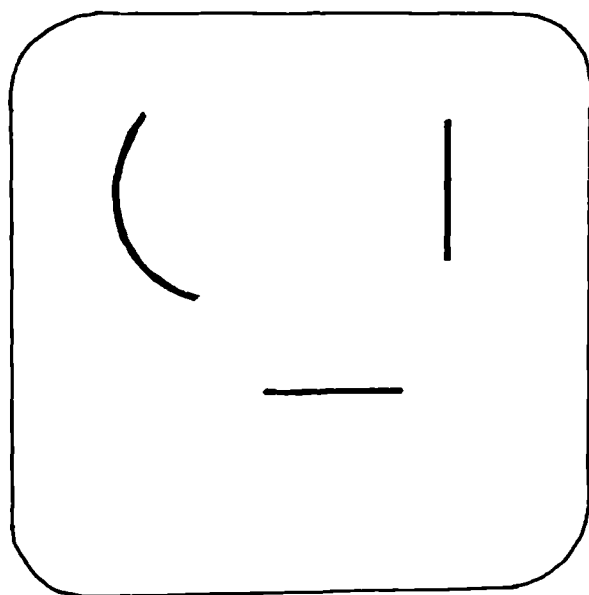
" ... convinced that the (test) is a useful and promising instrument for the assessment of creative potential world-wide."

The author's initial reaction to this paper was very positive. Jellen and Urban apparently achieved with their subjects, exactly what it was hoped this project would achieve; assess student creativity through their drawings, distinct from their graphic skills. All the alarm bells and misgivings about the relationship between their theories and their results were ignored and efforts were concentrated on the potential application of this test. Ultimately all psychology research must have some 'fit' with reality. So the first question was, what is likely to happen if this exercise was given to the subjects in the current sample of the population?

Looking at those few examples of children's work illustrated in the J/U report it was likely that the response of older students would be much more sophisticated, and more structured (after several years of art training).

There were three immediate problems with adoption of the Jellen/Urban Test:-

- Problem 1     - The fragments implied no hidden forms, offered no pictorial relationship, in fact were no real stimulus at all.
- Solution 1     - Experiment with the stimulus fragments, keep the abstract elements, but find some variable/implied relationships/identities which offer some immediate positive stimulus.



This was the optimum solution, shown actual size.

- Problem 2 - Suppose you mess up the drawing, what then? One of the main planks of teaching creative arts is that of `deferred judgement`, never accept your first idea, push your thoughts still further.

To paraphrase Edward de Bono, your first idea is not necessarily the best idea.

- Solution 2 - Ask the subjects to produce more than one drawing. This idea not only solved the problem of deferred judgement, but immediately gave a measure of ideational fluency, considered a major element in creativity, and always previously measured verbally. Here was a simple measure of visual fluency.

With regard to the optimum number of drawings to be offered in the test, comprehensive piloting (50+) suggested that 14 year old pupils could cope easily with six, and older students with twelve. Two new elements now enter the equation, scale and boredom. What is the minimum acceptable size for the squares, and will the subjects get bored with the test before the end (how will the judges distinguish between a subject who ran out of ideas and one who is just bored)? Again, piloting with a group (23) of 14/15 year old pupils proved that they were comfortable with drawings as small as 3" x 3" (80cm). These small scale works had the side-effect of increasing the "psychological safety" (after Rogers), these little drawings were "ideas" not "art".

Problem 3 - Assessment:

- a will the Jellen/Urban criteria really identify a creative response?
- b even if it can differentiate the extremes of a 'bell curve', can it grade the 68% in between?

- Solution 3 -
- a The pilot tests did show that marking the drawings on the basis of the Jellen/Urban criteria did produce higher grades for the more imaginative work than for the poor responses. But ...
  - b Poor work scored 8, good work scored 9, so did excellent work.

The issue here is whether the Jellen/Urban criteria are fundamentally flawed, or is the real problem in the population sample. Full-time art students are all likely to be from the top 10% on any scale of drawing ability, so either way the criteria needed modification. This problem was tackled by drawing up a list of consensual criteria of creativity from current literature, and matching it to the Jellen/Urban criteria, then applying the compromise to the context of this drawing test.

<b>Jellen/Urban</b>	<b>Components of Creativity</b>
Continuation) Completion) Connection)	These three items measure only a very basic level of response; Flexibility?
New Elements Theme Boundary Breaking Humour Unconventionality	Imagination Imagination/Originality Risk taking Humour Originality
Perspective	Shows initially higher spatial ability, but also possible conceptual change from 2D to 3D
Speed	Possible measure of Fluency

#### **Revised Marking Scheme:**

- a - Dropped the item "Speed", for two reasons; it was impractical for this investigation as it is impossible to control within a self-report questionnaire; secondly it is a poor measure. Creativity is not the speed at which the floodgates open, but how much water is in the dam.
- b - Retained the three basic items, as they give a measure of low level creative responses.
- c - Retained "New Elements", "Theme" and "Perspective".
- d - Boundary breaking became "Rotation", the rejection of imposed limits, which included breaking the square or rotating page. Much more difficult in this test than in the Jellen/Urban test because of the proximity of the other squares and the format of the page.
- e - Humour, Drama, and Sensitivity were combined as alternatives into a composite item, labelled "Emotion".
- f - Unconventionality remained as "Originality".

The tenth mark was awarded as a "Bonus" for extra ability shown in any of the previous

nine items.

These modifications of the Jellen/Urban tests were based on the belief that though their scheme would differentiate between creative and non-creative work, it was unable to discriminate between levels within the creative work. And as it was likely from the population sample of this investigation that much of the work would be fairly close in ability, a more finely tuned instrument was necessary.

The modifications to the system were principally aimed at reducing the scores for basic responses, and increasing the scores for imaginative work, creating a wider band of marks for originality, thus improving the discrimination between the levels of work of the more creative students.

So having altered the instrument, arrangements were made to pilot test the procedure. Ten drawings were selected from earlier pilot drawing exercises, showing a range of imaginative responses (see Appendix 5.5), and were sent out to twenty art teachers with the request that they be marked out of ten for their imaginative and original qualities. The results of these assessments were remarkably consistent, with the highest graded two drawings and the lowest four being clearly discriminated. The middle four drawings, though marked closely together proved to be resistant to ranking, perhaps because there was no real difference in quality between them.

Several weeks later the same drawings were sent to the same teachers with instructions to mark them strictly according to the enclosed criteria. A further ten sets were given to additional 'new' teachers. A matrix of marks for each drawing by each individual teacher was made up, and the mean scores for each drawing were then ranked. These preliminary tests of the "Criteria" marking scheme showed a profile of results which closely matched the earlier 'intuitive' marking scores. The rankings given by the 'new' teachers was also very close to the profiles of the original twenty.

**TABLE 16: ASSESSORS' RANKING OF PILOT DRAWINGS (Appendix 5.5)**

Ranking	D R A W I N G   N U M B E R		
	Intuitive marking	Criteria marking	Author marking
1st	4	4	4
2nd	5	7	7
3rd	10	10	5
4th	7	5	10
5th	3	3	3
6th	9	9	9
7th	2	2	2
8th	1	1	1
9th	8	8	8
10th	6	6	6

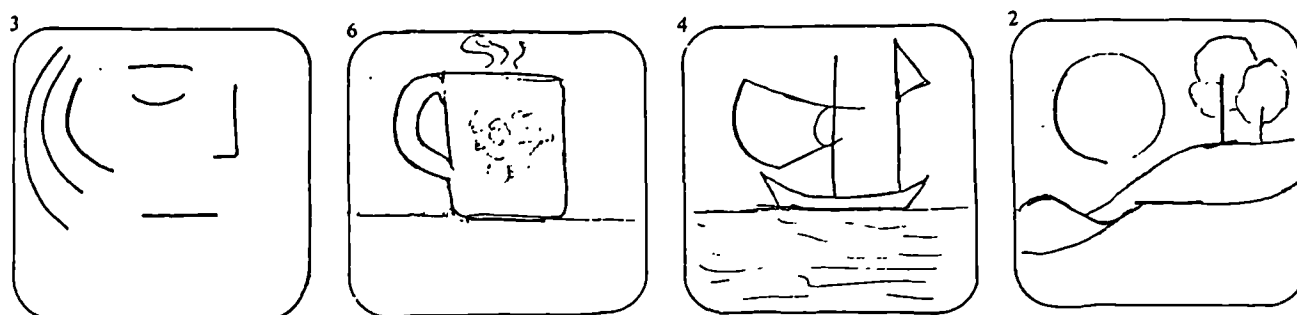
As the author was to be the sole marker of the drawings from the questionnaire, it was imperative that his marking of the criteria matched very closely the teachers' profile, which it did. Confirmatory statistical analysis using Spearman's 'r', showed a correlation of  $r = .95$ . Following these preliminary tests, it was considered that the "Original Image Production" exercise was a viable measure of visual creativity, and was included in the questionnaire.

The students were presented with two A4 pages, each having six squares for completion. Within each square were three short lines, one curved, one horizontal, and the other vertical. These lines were positioned so as to simulate several alternative stereotyped responses, a face, a mug, a yacht, and a landscape; or they could be the basis of abstract "patterns". The instructions read"-

"Using these three lines in your work, produce twelve different images/pictures, either abstract or representational.

Remember it is the variety that is important, not the quality of the drawing. Give titles if appropriate."

Predicted stereotyped responses of face, mug, yacht and landscape.



Face

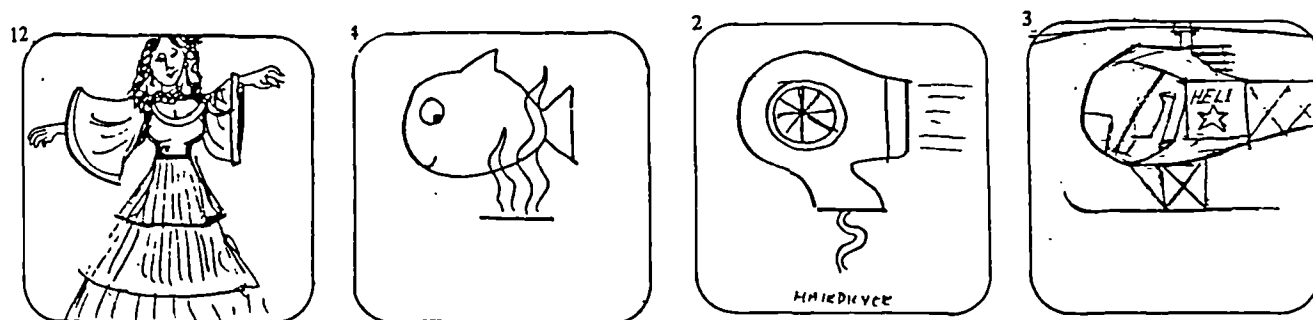
Mug

Yacht

Landscape

As expected, many of the testees followed the stereotyped response but some failed even to see those keys. Some of the outstanding work did not use any of the stereotypes, others did but in highly original ways. Many students created new stereotypes, using the stimulus lines to produce a vast range of human and animal figures, domestic appliances, and transport vehicles.

New stereotypes:-



Figures

Animals

Appliances

Transport

Further examples of these drawings are shown in Appendix 4.13.



## RESULTS:

194 students completed this section of the questionnaire; comprising 129 art students and 65 non-art controls; of which 78 were males and 116 females; with 109 based in sixth forms and 85 in higher education. They each completed twelve drawings for a possible maximum mark of 120. Two sets of marks were recorded for analysis, the ten individual category marks for each drawing, and the overall total score on the test for each student. The means of these total scores, expressed as percentages, were then subjected to t-tests between the mean scores of each group of students, and the six major groups showed differences with a level of statistical significance which was unlikely to be due to chance.

**TABLE 17: t-tests of GROUP MEANS on ORIGINAL IMAGE PRODUCTION**

Group	Mean	SD	t	SS level p<
All artists (129)	55.72	25.63	2.55	.01
All controls (65)	45.97	24.30		
All males (77)	54.51	27.27	.91	.37
All females (117)	51.10	23.21		
All 6th Form (109)	57.09	22.79	2.92	.00
All HE (85)	46.51	27.71		

These results were quite surprising. It was expected **Hypothesis C3**, that the art students would produce higher mean scores on these tests of visual imagery, which they did; and it was not expected **Hypothesis C7**, that there would be a significant gender difference. But it was not expected **Hypothesis C6**, that the older Higher Education art students would score significantly ( $p<.00$ ) lower than the younger Sixth Form artists, as was shown by these results with a 6F group mean of 57 compared to the HE mean of 47.

In this section the first **Hypothesis C1**, was that "Academic ability (AvOG) will not correlate with measures of creativity (OIP) " and the results appear to support this, with significance levels of group correlations between AvOGrade and OIP showing at  $p<.43$  for all students,  $.12$  for all artists, and  $.37$  for all controls.

**Hypothesis C4** claimed a relationship between Spatial Ability (SA) and Original Image Production (OIP). Again the results support this with the scores of all students providing a correlation significant at the level of  $p < .01$ ; also the artists who had higher scores on both SA (50) and OIP (55) produced a correlation significant at the .01 level. In the control group, with lower mean scores, SA (46) and OIP (46) the correlation was only significant at the level of  $p < .11$ .

**Hypothesis C5** suggested a correlation between OIP and Creative Personality and this is shown in the art group with means of (OIP 55) and (CP 66), and a correlation with a significance level of  $p < .03$ . The control group with a higher mean score (71) on Creative Personality, only produce a mean of 46 on the OIP test, and have a correlation with a significance level of only  $p < .31$ . Suggesting that the correlation of creative personality and creative production may only exist at the higher levels of ability.

#### **ABILITY: Artists v Controls**

The second **Hypothesis C3**, proposed that "Art students would score significantly higher than non-art controls on the OIP exercise" and this was confirmed by the t-test on the mean scores of the two groups which was significant at the level of  $p < .01$ .

**TABLE 18: GROUP MEAN TOTALS, ORIGINAL IMAGE PRODUCTION**

	ARTISTS		CONTROLS		t	SS
	MEAN	SD	MEAN	SD		
All Artists	55.72	25.63			2.55	.01
All Controls			45.97	24.30		
Male Artists	58.67	27.27			1.98	.05
Male Controls			44.74	30.40		
Female Artists	53.60	24.34			1.57	.12
Female Controls			46.64	20.57		

Analysis of the mean scores on the individual test evaluation criteria, showed that there

were significant differences between art students and the non-art controls on nine out of ten items. On the tenth item No. 7 "Rotation" (boundary breaking, risk taking), so few subjects scored at all that individual differences were more influential on the group score, and in all these cases the standard deviations were greater than the group means.

**TABLE 19: GROUP MEANS on TEN 'OIP' INDIVIDUAL CRITERIA**

	All Artists		All Controls		SS	F/X
	Mean	SD	Mean	SD		
1 Continue	11.74	.72	9.57	3.60	.00	.60
2 Complete	11.70	.79	9.53	3.42	.00	.64
3 Connect	11.18	1.96	8.82	3.63	.00	.65
4 New Elem	11.64	1.21	9.61	3.36	.00	.60
5 Theme	11.23	2.03	9.16	3.44	.00	.60
6 Perspect	4.68	3.55	1.61	2.06	.00	1.49
8 Humour	5.06	3.32	3.37	2.99	.00	.57
9 Original	7.11	3.28	4.77	3.41	.00	.69
10 Bonus	4.12	2.76	1.86	2.16	.00	1.05

This pattern was continued in the comparison of female artists and controls, but was less obvious in the comparisons between the male groups, where though the same 9:1 ratio appeared, but only three of the items (numbers 3, 6, 10) reached a level of statistical significance ( $p < .05$ ).

**TABLE 20: GROUP MEANS on TEN INDIVIDUAL 'OIP' CRITERIA**

	Female Artists		Female Controls		SS	F/X
	Mean	SD	Mean	SD		
2 Complete	11.72	.67	9.14	3.57	.00	.72
3 Connect	10.85	2.44	8.31	3.84	.00	.66
4 New Elem	11.51	1.50	9.17	3.49	.00	.67
5 Theme	11.03	2.46	8.69	3.55	.00	1.21
6 Perspect	4.44	3.57	1.54	2.11	.00	1.37
8 Humour	4.08	3.21	2.60	2.49	.01	.59
9 Original	6.53	3.37	4.09	3.28	.00	.74
10 Bonus	3.53	2.59	1.37	2.17	.00	1.00
	Male Artists		Male Controls		SS	F/X
	Mean	SD	Mean	SD		
3 Connect	11.65	.72	9.94	2.91	.03	.59
6 Perspect	5.02	3.54	1.75	2.02	.00	1.62
10 Bonus	4.95	2.81	2.94	1.77	.00	1.14

This test clearly does distinguish between art students and non-artists, but can the conclusion be drawn that these artists are more creative than the non-artists? In so far as this test is a measure of the number of creative elements contained in the work, it could be said that the art students do produce the more visually creative work. With regard to the comparative distribution of the marks:-

19% of Controls scored less than 30%  
No Artists fall within this band.

40% of Controls scored less than 50%  
9% of Artists fall within this band.

21% of Controls scored more than 70%  
54% of Artists fall within this band.

No Controls scored more than 85%  
6% of Artists fall within this band.

#### **GENDER: Males v Females**

Another issue which appears in these results is the role of gender. The Jellen/Urban test was claimed to be gender free on the basis of results which showed no 'significant' differences between the sexes, though in nine out of ten countries the boys did score more highly than the girls. The results of this study replicate this pattern, and though the highest individual score was by a girl, the t-tests on the overall scores were statistically significant in favour of the males at the level of  $p < .04$ , contradicting hypothesis C7 which claimed that there would be no difference in the gender group scores.

This was broken down further by comparisons of the sub-groups, which showed that the male artists (59) produced more original drawings than the female artists (54), who in turn were more original than the female controls (47); the male artists were also significantly more original than the male controls (45) at the level of  $p < .05$ .

**TABLE 21: GENDER GROUP MEANS on ORIGINAL IMAGE PRODUCTION**

	<b>Male</b>		<b>Female</b>			
	Mean	SD	Mean	SD	t	SS
All Males	54.51	28.77			.91	.37
All Females			51.10	23.21		
Male Artists	58.67	22.27			1.11	.27
Female Artists			53.60	24.34		
Male Controls	44.74	30.40				
Female Controls			46.64	20.57	(.30)	.77

Within the t-tests of the individual criteria, all ten items scored in favour of the males, with six items showing statistically significant differences between the gender groups; and two of these items, "Humour/Emotion" and "Originality" discriminated significantly between males and females in both the artists and control groups.

**TABLE 22: GENDER GROUP MEANS on TEN INDIVIDUAL CRITERIA**

	<b>ALL MALES</b>		<b>ALL FEMALES</b>			
ITEM	MEAN	SD	MEAN	SD	SS	F/X
3 Connect	11.15	1.78	9.93	3.25	.00	.38
4 New Elem	11.45	1.65	10.66	2.66	.02	.30
5 Theme	11.13	1.92	10.18	3.10	.02	.31
8 Humour	6.08	3.10	3.54	3.04	.00	.84
9 Original	7.47	3.10	5.64	3.53	.00	.52
10 Bonus	4.38	2.69	2.74	2.65	.00	.62
	<b>MALE ARTISTS</b>		<b>FEMALE ARTISTS</b>			
3 Connect	11.65	.72	10.85	2.44	.02	.33
8 Humour	6.44	2.99	4.08	3.21	.00	.74
9 Original	7.93	2.98	6.53	3.37	.03	.42
10 Bonus	4.95	2.81	3.53	2.59	.01	.55
	<b>MALE CONTROLS</b>		<b>FEMALE CONTROLS</b>			
8 Humour	5.06	3.38	2.60	2.49	.02	.99
9 Humour	6.25	3.30	4.09	7.28	.04	.66
10 Bonus	2.94	1.77	1.37	2.17	.01	.72

### AGE: 6th Form v HE

The hypothesis C6 was that age would not make a difference to the originality of the drawings produced, but there was an assumption that as all the higher education students were in full-time art training, they might have a mean level of visual facility greater than the sixth former artists, some of whom were not intending to take up a career in art. In fact t-tests on the total scores showed a tendency towards the sixth formers at a level of statistical significance of  $p < .00$ .

**TABLE 23: AGE GROUP MEANS on ORIGINAL IMAGE PRODUCTION**

	6 t h FORM		HIGHER ED		t	SS
	MEAN	SD	MEAN	SD		
All 6 Form	57.09	22.79			2.92	.00
All H E			46.51	27.71		
6 Form Artists	61.31	21.70			2.96	.00
H E Artists			48.20	28.63		
6 Form Controls	48.17	22.75			.79	.43
H E Controls			43.40	26.14		

On evaluation of the ten individual items, the overall results showed six items to four in favour of the HE students but with only one item "Rotation" at a significant level ( $p < .03$ ). However, in comparison of the two artist groups, seven items (3 SS) to three (2 SS) in favour of the 6th Formers. To add to this confusion, in the control groups the items weighted nine to one in favour of the HE students with 2 SS.

**TABLE 24: AGE GROUP MEANS on TEN 'OIP' INDIVIDUAL CRITERIA**

	<b>All 6 Form</b>		<b>All H E</b>			
	<b>MEAN</b>	<b>SD</b>	<b>MEAN</b>	<b>SD</b>	<b>SS</b>	<b>F/X</b>
7 Rotate	0.79	1.34	1.37	1.76	(.03)	.33
	<b>6 F Artists</b>		<b>H E Artists</b>			
1 Continue	11.88	.41	11.52	.99	.03	.36
3 Connect	10.94	2.36	11.61	.79	(.04)	.85
6 Perspect	5.26	3.64	3.68	3.18	.02	.50
7 Rotate	0.62	1.19	1.45	1.96	(.02)	.42
9 Original	7.73	3.21	6.03	3.15	.01	.54
	<b>6 F Controls</b>		<b>H E Controls</b>			
1 Continue	8.81	4.12	10.84	2.04	(.02)	1.00
2 Complete	8.91	3.89	10.58	2.14	(.05)	.78

**CONCLUSION:**

With regard to the overall effectiveness of the measure:-

- the single total score will discriminate between artists and controls
- all the individual criteria except 'Rotate' discriminate between the art students and the controls
- this test does not appear to be gender free
- membership of a particular age group does not seem to influence the results.

This instrument is divided into three parts, which aim to differentiate levels of creative visual imagination:-

Items 1, 2 , 3 measure basic, simple responses ..... LOW  
 Items 4, 5, 6 measure active participation/development.....MIDDLE  
 Items 7, 8, 9 measure innovative contributions ..... HIGH

Though this measure proved to be relatively effective, there is still room for considerable development and improvement, and it is hoped that future research will refine:-

- a the possible use of different stimulus ideas
- b the use of more encouraging written instructions
- c re-definition/analysis of the evaluation criteria.

#### **4.54 COGNITIVE STYLE:**

##### **CONVERGENT / DIVERGENT THINKING (Appendix 4.8)**

The most systematic study of the cognitive aspects of creativity was pioneered by J. P. Guilford and his associates in the early 1950s. They introduced the terms convergent and divergent thinking. A convergent thinker is distinguished by his ability to deal with problems requiring one correct answer; and a divergent thinker is more successful in performing open-ended tasks, solving problems with more than one possible answer, often by heuristic procedures. Guilford labelled a group of intellectual abilities (fluency, flexibility, originality, redefinition and elaboration) as divergent thinking; then devised a series of tests to measure this element. These tests, such as 'Alternate Uses', 'Plot Titles' and 'Consequences' required the subject to generate a multitude of responses which were assessed by judges' ratings.

Guilford, Torrance, Wallach, Kogan, Wing (qv) and others have suggested that creative individuals should possess the types of abilities measured by these tests, and this has had considerable influence on both creativity research and education. Divergent thinking became, in many instances, the only measure of creative ability, and divergence and creativity became almost synonyms. Hocevar and Batchelor (1990):

"There is overwhelming evidence that divergent thinking and the creative personality are interesting constructs in their own right ... There is at least some evidence that these two constructs are potential causes of real-life creativity."

Teaching styles often found in science and maths lessons are usually logical and formally structured to encourage convergent thinking, whereas teaching in arts subjects is often aimed at generating a more open response. These effects were investigated by Crutchfield (1965), Hudson (1966), Haddon & Lytton (1968) and Covington (1974). Hudson also studied the effects of matching teaching and thinking (learning) style, as did Domino (1971), with similar conclusions; that convergers prefer formal, logical questions, that divergers prefer open-ended situations, and that problems arise for all concerned when there is a mismatch. Hudson's conclusions supported the earlier research



of Getzels & Jackson (1962), that teachers preferred their pupils to be of the convergent type, ie conformist and orderly. Riding & Cheema (1991 p201):

"Socially, it (divergence) is considered as irritating, disruptive and even threatening by teachers.:

It is interesting to note that these authors express divergence as a personality element rather than a purely cognitive ability.

The importance of establishing the nature of any relationship between creativity and divergent thinking was confirmed by the comments of E. T. Dowd (1990):

"It is intriguing as well as frustrating (despite Guilford's efforts) that almost no research has investigated the relation between creativity and divergent thinking."

For the purpose of this investigation it was considered impractical to adopt one of the divergent tests, partly because of difficulties of administration and time; but principally because of the well-documented problems of marking divergent tests, ie Hocevar (1990 qv), and Runco (1992). Instead the personality characteristics identified by Hudson (1966 p190/1) were translated into a 16 part questionnaire, with the answers measured on a 5 point Likert scale. Seven items identified **Divergent** characteristics:-

- |                         |                             |
|-------------------------|-----------------------------|
| I strongly approve of:- | 5 Imagination               |
|                         | 7 Independence from parents |
|                         | 8 Mild eccentricity         |
|                         | 11 Arty clothes             |
|                         | 12 Trying to be original    |
|                         | 13 Using bad language       |
|                         | 16 Sensitivity              |

Nine items identified **Convergent** characteristics:-

- |                         |                            |
|-------------------------|----------------------------|
| I strongly approve of:- | 1 Mixing well, socially    |
|                         | 2 Being neat and tidy      |
|                         | 3 Obedience                |
|                         | 4 Low self-esteem          |
|                         | 6 Respect for adults       |
|                         | 9 having set opinions      |
|                         | 10 Accepting expert advice |
|                         | 14 Being well mannered     |
|                         | 15 Good team member        |

For the purpose of this study, the scores on the Convergent items were 'reversed', allowing the overall scores on the sixteen items to be totalled for each subject, and the individual given a 'Divergency' score. Two-tailed t-tests were then carried out on the mean scores of each student group.

**TABLE 25: RESULTS of t-tests on GROUP MEANS, DIVERGENT THINKING**

ABILITY	GROUP	MEAN	SD	t	SS
	Artists	55.00	16.68		
	Controls	57.22	19.78	(.78)	.44
	Male artists	58.32	15.16	.14	.89
	Male controls	57.74	19.35		
	Female artists	52.61	23.27		
	Female controls	56.93	10.80	(1.13)	.26
<b>GENDER</b>	Males	58.14	20.54	1.46	.15
	Females	54.16	14.27		
	Male artists	58.32	15.61	1.56	.12
	Female artists	52.61	23.27		
	Male controls	57.74	19.35	.22	.83
	Female controls	56.93	10.80		
<b>AGE</b>	6 Form	57.15	13.05	1.19	.24
	H Education	53.94	23.99		
	6Form Artists	57.55	11.87	1.65	.10
	HE Artists	51.56	28.08		
	6Form Controls	56.29	15.40		
	HE Controls	58.30	12.99	(.56)	.58

t-tests were then carried out between these groups on the 16 **individual** test items, making a total of 144 comparisons. The results showed 52 SS items (Appendix M). The Sakoda et al (1954) "Test of significance for a series of Statistical Tests" showed that the probability of obtaining this number of significant results by chance was less than  $p < .00$ .

#### **ABILITY: Artists v Controls**

On the seven Divergent items, a comparison of Artists and Controls showed that the artists scored higher than the controls on five items, three of statistical significance:-

Item	5	Imagination	$p < .00$
	7	Independent	.00
	16	Sensitive	.00

The same number of SS items were true of Male artists when compared with Male controls. The Female artists scored more highly than the Female controls on six divergent items, but only two were of statistical significance:

Item	5	Imagination	p<.00
	16	Sensitive	.00

Although only the Male controls considered themselves more Unconventional than the artists, all the controls were more comfortable with Bad Language. Over the nine 'Convergent' items, comparison of the means of the two groups showed a reversal of the level of responses, with the control groups producing higher mean scores on the nine items in the ratio of 7:2 for all students, with six items of statistical significance:

Item	1	Sociable	p< .00
	3	Obedient	.02
	6	Respect adults	.00
	10	Accept experts	.02
	14	Well mannered	.00
	15	Team member	.03

On the same items the means for male controls were higher than those of the male artists in the ration of 8:1, with seven items at a level of statistical significance:-

Item	1	Sociable	p< .01
	2	Neat and tidy	.01
	3	Obedient	.00
	6	Respect adults	.00
	10	Accept experts	.01
	14	Well-mannered	.00
	15	Team member	.02

However, though the comparison of female artists and controls showed a similar direction, with a ratio of 7:2, only one of these items, number 14 'Well-mannered' was at a level of statistical significance (p<.00).

The literature on this question suggests that art students (all creatives) would be more divergent than non-art students (some creatives). From a comparison of the means of the totalled scores of the two groups, this would not appear to be the case. However, more

detailed analysis of the individual items of the questionnaire reveals that the artists score more highly on those items which identify divergency, significantly Imagination, Independent and Sensitivity, all at a level  $p < .00$ . Whereas the control group score more highly on the convergent items, significantly Sociable (.00), Obedient (.02), Respect for Adults (.00), Accepting Expert Advice (.02), Well Mannered (.00), and a Good Team Member (.03). The simplistic conclusion to be drawn from this data is that within this sample the art students are slightly more divergent than the non artists, who are considerably more convergent than the artists.

### **GENDER: Males v Females**

Over the whole sample, a comparison of male and female responses produced a tendency for the male students to score slightly higher (58) than the female students (54) on the totalled divergent thinking scores. On the seven divergent items the split was 4:3 in favour of the males, but with only one item 13 Bad Language, statistically significant (.00). Comparing the male and female artists, the split was 3:4, with again only item 13 significant for the males (.01), and item 11 Arty Dress significant (.02) for the females. Looking at the non- art controls, the same sort of pattern appears, a 4:3 split for the males with only one item, number 6 Respect for Adults, statistically significant (.05).

Within the art groups the results were inconclusive, the males outscoring the females 5:4 but no items reached a level of statistical significance. However, within the non-art controls, the males outscored the females 8:1 with four significant items; number 2 Neat and Tidy (.05), number 3 Obedient (.01), number 6 Respect (.00), and number 10 Accepts Expert Advice (.05). On the issue of gender it would appear that the only relevant conclusions that can be drawn from this data are:-

- 1 On the totalled divergent thinking scores, the males outscored the females, but only at the level of  $p < .15$ . This difference seems to reside in the art groups where the males are more divergent than the females at the level of  $p < .12$  ; whereas there is no apparent difference between male/female non-art students,  $p < .83$  .
- 2 The only divergent items which discriminate for gender are the males' acceptance of bad language (.01), and the female approval of 'arty' clothes (.02).

- 3 It would appear that the gender differences are strongest in the male domination of the control group on the convergent items. Of the nine convergent items, four are statistically significant in favour of the males and a further two, Sociable (.09) and Team Member (.07) are close.

These results would appear to support the idea that convergence and divergence are separate dimensions, because though the males are more strongly convergent than the females, the females are not more divergent than the males.

#### **AGE: 6th Form v Higher Education**

It was not thought that age would contribute a significant element to the question of the relationship between creativity and divergent thinking. However, the first results of t-tests on the totalled divergent scores showed the 6F students scoring slightly higher (57) than the HE (54), but only at a level of  $p < .24$ . So the younger students had apparently a higher level of response to aspects of divergent thinking. Further analysis showed this difference to reside principally in the 6F art students (58:52)  $p < .10$ , with the results from the controls being reversed in favour of the HE (58) against the 6F mean of 56, giving a level of  $p < .58$ .

Analysis of scores on the individual items revealed further anomalies. On the seven divergent items, the HE students produced the higher means on five items, with only one, Independent, significant at the level of .02; whereas the Sixth Formers had one of their two items significant, Arty Dress at  $p < .01$ . Within the art groups, the HE students led by a ratio of 5:2, with two items, Bad Language and Sensitivity, significant at the levels of .00 and .05 respectively. No items weighted in favour of the Sixth Form were of a significant level. However, within the control groups the situation is reversed, with the Sixth Form group scoring 5:2, with two items statistically significant, Arty Dress (.01) and Bad Language (.03). Within the convergent items, this pattern of results is maintained but much more emphatically. In the whole student groups the HE students score higher on more items at a ratio of 6:3, with one item, Obedient, significant at .01. However, within the art groups the ratio in favour of the HE artists was 8:1, with seven items significant and the eighth at  $p < .08$ . Again the control groups reverse the pattern, with a

ratio of 8:1 in favour of the Sixth Form, and five of these items statistically significant. The issue of the effect of age on divergent thinking has become more confused at the conclusion than it was at the beginning. Though the overall results show a tendency for the younger students to produce higher scores on aspects of divergency, analysis of the individual items revealed a paradox. Whereas the 6F were more divergent than the HE, they were also considerably more convergent. Within the art groups the 6F outscored the HE, with this pattern reversed in the control groups, with the Sixth Formers both more divergent and convergent at the same time, that is some 6th formers were divergent and some were convergent.

### FACTOR ANALYSIS:

A factor analysis was carried out on the scores of the sixteen items of this personality questionnaire, and the results supported the Convergent/Divergent split. Four factors were extracted by Varimax rotation with Kaiser Normalisation, two containing all the convergent items and two with only divergent.

### CONVERGENT

Factor 1	"Conformist"	26% var	Item	Label	FL
			2	Neat and Tidy	.78
			15	Good Team Member	.76
			6	Respect for Adults	.76
			1	Mixes Well Socially	.75
			14	Well Mannered	.74
			13	(Bad Language)	.74
			3	Obedient	.59
			10	Accept Expert Advice	.58
Factor 4	"Subordinate"	8% var	4	Low Self-esteem	.78
			9	Has Set Opinions	.62

### DIVERGENT

			Item	Label	FL
Factor 2	"Self-contained"	12% var	8	Eccentric	.74
			7	Independent	.63
			16	Sensitive	.61
			5	Imaginative	.51

Factor 3	<b>"Individual"</b>	9% var	12	Values Originality	.76
			11	Approves Arty Clothes	.74

## CONCLUSION:

The domain of the arts is, according to Hudson et al, more likely than the sciences to attract divergent thinkers, and so a sample of art students should contain more divergence.

These results indicate that some creative individuals (art students) do possess a higher level of 'divergence' than non-artists (who possess a higher level of 'convergence').

Whether this relationship can be used as a predictor of creative ability, should only be seen in the context of Cronbach's warning (1984) about the "instability of divergent performance"; and the conclusion of Barron and Harrington (1981):-

"... one can say that some divergent thinking tests, administered to some samples, under some conditions and scored according to some criteria, measure facets relevant to creativity criteria beyond those measured by indices of general intelligence".

#### 4.55 MOTIVATION:

##### SELF ACTUALISATION (APPENDICES 4.8/L/M/N/O/P/Q/R)

In 1977 Wendy Zerlin described self-actualisation as covering:

"... the processes whereby an individual comes to understand himself and thereby develops his talents and capacities ..."

This is a basic concept in the 'Humanist' theory of personality, which has its roots in the Existentialist philosophy of Søren Kierkegaard (1813-87), who proposed that man was a self-creating being, not endowed with a character and goals, but who must choose them himself by acts of 'pure decision'; by existential leaps. This idea was taken up by Carl Jung (1875-1961), and expressed in his theory of 'Individualisation' as the realisation of oneself as a person. The Humanistic school of psychology was founded in 1962 as an alternative to Psycho-analysis and Behaviourism. Supported by such diverse thinkers as Allport, Jung, Adler, Erikson and Murray, the movement's main activists were Carl Rogers (1902-87) and Abraham Maslow (1908-70). The four main principles of this Humanist research were:

- 1 The experiencing person is of primary interest.
- 2 Human choice, creativity, and self-actualisation should be the preferred areas of study.
- 3 Meaning should precede objectivity in research.
- 4 Ultimate value is placed on the dignity of the person.

Developing his theories through self-report and client-centred research, Rogers proclaimed that man was a rational being, who has the greatest knowledge about himself, his feelings, and his emotions. Rogers believed that each person was unique, and that what we should be studying was not how people are the same, but what it is that makes each individual different.

"The organism has one basic tendency and striving - to actualise, maintain, and enhance the experiencing organism".

Maslow's work, which overlaps that of Rogers, was built on the earlier research of Henry Murray, who developed a theory of motivation based on a hierarchy of human needs.



Maslow's theory of self-actualisation was based on the individual's potential for those characteristics which he believed make us most human:-

- love and affection
- aesthetic experience
- altruism

These characteristics he formulated into a hierarchy of human needs, which ascended from the basic biological needs, like food and safety, to the more complex psychological needs which become important to us only after the earlier needs have been satisfied. This hierarchy has seven levels:-

Top	7	Self-actualisation
	6	Aesthetic
	5	Cognitive
	4	Esteem
	3	Belonging
	2	Safety
Bottom	1	Hunger/thirst

The summit of his hierarchy was self-actualisation, which Maslow defined (1970) as:-

"... man's desire for self-fulfilment,  
 ... to become actualised in what he is potentially,  
 ... to become everything that one is capable of becoming".

There were three particular reasons for the selection of 'self-actualisation' as an item of study in this investigation:-

- 1 The Humanists and in particular Maslow, identified a relationship between self-actualisation and creativity.
- 2 Though much of his research was based on the study of famous people, like Einstein, Huxley, and William James, Maslow did not see self-actualisation as the preserve of genius, but was available to all.
- 3 Recurrent themes during many years of conversations between art students and the author, have been the drive for self-fulfilment and the development of the student's full potential.

Balancing these positive reasons, Thomas Dowd (1990), in reviewing work on the relationship between self-actualisation and creativity, found conflicting evidence both for

and against, and concluded, with reservations, that there was no relationship. However, in view of the discrepancy in these findings, it was felt that further study might help clarify the situation.

Maslow listed the personal qualities that are characteristic of self-actualisers, and the types of behaviour that he considered important to the development of self-actualisation. For the purpose of this investigation these aspects were drafted as questions in a twenty part self-report questionnaire (Appendix 4.8) and graded on a 1 to 5 Likert scale. The results were totalled to give a single 'self-actualising' score; with scores on the individual items also kept separate for more detailed analysis.

**A. How important is it for you to:-**

1. Realize your full potential ?
2. Be happy / fulfilled in your life ?
3. Win the respect of others ?
4. Retain your individuality ?

**B. Which of these characteristics apply to you ?:-**

5. I accept reality philosophically
6. I know myself (my personality) well
7. I am spontaneous
8. I prefer simple, natural things
9. I like to solve problems
10. I like to be private, detached
11. I am autonomous, I like to control my own life
12. I am independent
13. I am wilful
14. I am active
15. I like to learn new things
16. I accept that there are mystic situations
17. I prefer democratic situations
18. I have an unhostile sense of humour
19. I resist stereotyping labels
20. I am empathetic towards others.

**RESULTS:**

t-tests on the single totalled 'Self-actualisation' score, showed only two statistically significant differences between the means of the groups; HE Artists v HE Controls  $p < .02$  and HE Artists v 6th Form Artists at the .04 level .

**TABLE 26: RESULTS of t-tests on MEANS on SELF ACTUALISATION**

Group	Mean	SD	t	Level of SS
<b>ABILITY</b>				
All Artists	75.71	12.40	.74	.46
All Controls	73.92	17.75		
Male Artists	75.91	13.06	.62	.54
Male Controls	74.00	10.83		
Female Artists	75.57	19.13	.49	.62
Female Controls	73.88	15.14		
<b>GENDER</b>				
All Males	75.34	12.40	.16	.87
All Females	74.97	17.75		
Male Artists	75.91	13.06	.11	.91
Female Artists	75.57	19.13		
Male Controls	74.00	10.80	.03	.97
Female Controls	73.86	15.14		
<b>AGE</b>				
All Sixth Form	74.14	16.27		
All Higher Education	76.37	15.21	.97	.33
Sixth Form Artists	73.14	18.49		
Higher Education Artists	79.18	13.63	2.05	.04*
Sixth Form Controls	76.26	10.01	1.51	.14
Higher Education Controls	71.20	16.77		

**ABILITY: Artists v Controls**

These results show that the overall score (total of twenty items) on this test does not discriminate between artists and controls at a significant level except in the HE sector:-

Higher Education Artists	79.18	13.63	2.38	.02*
Higher Education Controls	71.20	16.77		

t-tests then were carried out on the twenty **individual** items to show which items were the best indicators, and where the particular differences between the groups lay. The results showed that ten of the items discriminated between the means of the groups of artists and non-art controls (Ability), at a level of statistical significance less than  $p < .05$ . Using the 'Sakoda' test (qv) the probability of these results being due to chance was less than  $p < .00$

	Item	ARTISTS		CONTROLS		t	SS
		Mean	SD	Mean	SD		
1	Potential	4.45	.75	4.04	.94	3.22	.00
2	Fulfilled	4.75	.06	4.31	1.05	3.53	.00
4	Individual	4.62	.73	3.97	1.04	4.87	.00
5	Philosophical	3.60	.82	2.93	1.18	4.31	.00
6	Self knowledge	4.15	.89	3.48	1.32	3.89	.00
10	Detached	3.17	.98	2.71	.80	3.09	.00
14	Active	3.87	1.00	2.39	1.13	3.41	.00
15	New things	4.40	.74	3.89	.87	3.99	.00
18	Humour	3.82	1.01	3.26	1.24	3.18	.00
19	Stereotype	3.95	.97	3.57	1.21	2.23	.04

Within the Male sub-group seven items discriminated between artists and controls

2	Fulfilled	4.69	.74	4.05	1.12	2.86	.02
5	Philosophical	3.62	.75	2.74	1.52	3.22	.02
6	Self knowledge	4.32	.74	3.05	1.39	4.90	.00
14	Active	3.80	1.10	3.05	1.08	2.52	.02
15	New things	4.42	.76	3.68	1.06	3.22	.01
18	Humour	3.92	1.03	3.05	1.22	2.97	.01
19	Stereotype	4.00	.86	3.16	1.30	3.14	.02

Eight items discriminated between female artists and female controls:

1	Potential	4.52	.70	4.03	.90	3.08	.01
4	Individual	4.68	.53	3.92	1.04	4.96	.00
5	Philosophical	3.58	.87	3.03	.97	2.95	.01
10	Detached	3.19	.89	2.65	.86	3.03	.00
12	Independent	4.21	.79	3.78	.10	2.38	.03
13	Wilful	4.09	.98	3.64	1.10	2.13	.04
14	Active	3.93	.01	3.42	1.16	2.46	.03
15	New things	4.39	.74	4.00	.75	2.56	.01

#### **GENDER: Male v Female**

On the issue of Gender, the t-test results were less conclusive. In the comparison of all male students with all females, fifteen items tested in favour of the females, although only two were at a statistically significant level.

		MALES		FEMALES			
		Mean	SD	Mean	SD		
16	Mystic	3.43	1.31	3.98	1.07	(3.04)	(.00)
20	Empathetic	3.63	.89	3.90	.88	(2.01)	(.05)

In comparison of male and female artists, though thirteen items scored in favour of the females, only three were at a level of statistical significance of  $p < .05$ .

12	Independent	3.74	1.18	4.21	.79	(2.58)	(.02)
13	Wilful	3.64	1.05	4.09	.98	(2.39)	(.02)
16	Mystic	3.44	1.31	4.09	1.04	(2.99)	(.01)

Seventeen items showed in favour of the male artists, but only one, item 6, Self-knowledge, at a level  $p < .05$ . The differences between the male and female group means of non-artists is less clear cut, with the items split 8:12 towards the females, but with none of these differences at a level of acceptable significance.

#### **AGE: 6th Form v Higher Education**

Testing the students on the basis of Age, Sixth Formers against Higher Education, eighteen of the twenty items discriminated in favour of the Higher Education group, but only six at a level of significance less than  $p < .05$ . Using the Sakoda graph (qv), the probability of these results being due to chance was less than .00.

		6th FORM		HIGHER ED		t	SS
		Mean	SD	Mean	SD		
2	Fulfilled	4.50	.84	4.74	.73	(2.00)	(.04)
5	Philosophical	3.20	1.07	3.62	.85	(2.80)	(.01)
12	Independent	3.76	1.00	4.18	.93	(2.83)	(.01)
15	New things	4.01	.90	4.53	.60	(4.32)	(.00)
17	Democratic	3.34	1.25	3.76	1.02	(2.37)	(.02)
19	Stereotype	3.69	1.13	4.00	.97	(1.92)	(.05)

In the art groups, the t-tests between 6 Form artists and HE artists produced eighteen items in favour of the older students, but with only four at a statistically significant level:-

		6FormArt		HighEdArt		t	SS
		Mean	SD	Mean	SD		
8	Natural	3.36	.88	3.74	.90	(2.28)	(.03)
10	Detached	3.02	1.02	3.38	.90	(2.02)	(.04)
15	New things	4.17	.83	4.68	.51	(3.89)	(.00)
20	Empathetic	3.58	.92	3.91	.95	(1.89)	(.05)

In the control groups, eight items discriminated significantly between 6 Form and HE controls, with six in favour of the older students, and only two in favour of the sixth formers:-

		6FormCons		HighEdCons		t	SS
		Mean	SD	Mean	SD		
4	Individual	3.74	.89	4.30	1.19	(2.06)	(.05)
5	Philosophical	2.44	1.13	3.61	.89	(4.12)	(.00)
8	Natural	3.82	1.10	3.00	.80	3.04	.00
12	Individual	3.55	1.09	4.22	.60	(2.68)	(.01)
15	New things	3.70	.95	4.17	.65	(2.09)	(.03)
16	Mystic	4.00	1.02	3.21	1.28	2.53	.02
17	Democratic	2.91	1.30	3.87	1.01	(2.96)	(.00)
19	Stereotype	3.28	1.37	3.95	.83	(2.10)	(.03)

## CONCLUSION

The three main hypotheses about motivation were:-

**M1** "that art atudents are "absorbed" in their work and so will score low on extra "hobbies" etc."

**M2** "that they have strong "intrinsic" motivation, and are strong self-actualisers"

**M3** "that their motivation comes mainly from "intellectual curiosity" .

Measuring motivation is a notoriously difficult process, and in reality was beyond the scope of this investigation. However, as the importance of motivation in the production of creative ideas is emphasised by many authors, it was not possible to avoid the issue, and it was felt necessary to find at least some general evidence in support of the hypotheses.

To test M1, it was assumed that the degree of absorption would show in a lack of interest in other activities, ie. the art students would score lower in the self-reports of `Hobbies`. In fact they claimed more outside activities than the control group.

To test for a high level of intrinsic intellectual motivation, the scores from the Self-actualising questionnaire showed that in comparison to non-artists, art students are only slightly more Self-actualising; particularly in the HE sector ,evidenced by the t-tests of Artists v Controls, significant at the level of  $p < .04$  .

With regard to the issues of whether Self-actualising is a measure of creative ability or potential, many elements of Self-actualisation are also elements in what Sternberg et al believe to be the Creative Personality, and so correlate highly with scores on this measure. Also the totalled scores for Self-actualising correlate with scores on other measures of creativity, like Original Image Production (OIP), and Divergent Thinking.

**TABLE 27: Statistical Significance Levels of Correlations between Self-actualisation and Creativity Variables**

	All students	Artists	Controls
Var 3 Creativity Factors	.00	.00	.01
Var 6 Original Image Production	.10	.00	.45
Var 8 Creative Personality	.00	.00	.02
Var 9 Divergent Thinking	.22	.02	.06

## 4.6 QUALITATIVE ASSESSMENT

### 4.61 INTRODUCTION

"There is a unity among all of them (art students) which may be typified as a Bauhaus spirit. This spirit appears to have grown out of the bauhauslers' unusual sense of dedication to principles, a consistency and yet restlessness in their search, independence whatever its price, courage, and a love of society evidenced by their purposeful creativity and feeling of social responsibility."

"Most bauhauslers reveal a very considerable sensitivity, not only in respect of the arts and professions, but also to the world, its peoples, politics and problems".

Most bauhauslers are tolerant of personality, eccentricity, and licence; patient with less creative persons, but completely intolerant of social injustice, political chicanery, and charlatanism."

These descriptions of art students at the Bauhaus were collected by R.R.Isaacs (1968) from an extensive survey of 250 former students. Other descriptions confirm the general perception of the art student stereotype which still exists today.

"Had you visited Weimar...you would have met...youths, mostly in gangs, with flowing black hair and legs like gooseberries...they're students at the Bauhaus." (Anhalter Anzeiger 7.5.30 qv)

"They made a vivid appearance.....some barefoot or in sandals, some with the long beards of artists." (Bayer 1938 qv)

"Many wore long hair which they had cut off...the baldness stimulated ideas,such as painting one's shaven head with black squares."(Arndt 1968)

The public perception of art students was reaffirmed in 1946 in a patronising paragraph in the Ministry of Education Pamphlet no.6 "Art Education"(p31), as well as specific instructions on how to deal with them:-

"...it is certainly as true of students in art schools....that they will vary greatly in temperament and outlook and that too much thought cannot be given to their individual idiosyncracies by those who are put in charge of them. But the main business of any school is to cater for the average student."

"The 'genius' who is 'born but cannot be made' is bound to crop up from time to time in art schools....and it will be the duty of the school to recognize 'him' when he appears, to give him the best opportunity he can be given in that school and to see to it that he is passed on to a more advanced institution for further study when necessary."

(Quite what happens if the 'genius' is female is not elucidated !)

These comments which largely describe art students in the 1920/40's, still represent many

peoples` perceptions of art students today. Many art students have long hair or decorated heads, and dress in either a scruffy or bizarre manner, and though their dress code may be an obvious statement of their attitudes to society, more importantly their deeper feelings of tolerance, independence, adherence to principles, and *social responsibility remain just* as strong. Which is probably just as well, as the social and political pressures on the "creative urge" . Ian Heywood highlighted the problems facing art students in his introduction to the 1993 Leeds Metropolitan University Degree Show:-

"It has perhaps never been more difficult to be a student, and particularly a student of fine art. The harshness of the economic climate makes anything other than middle-aged caution and pragmatism seem almost irresponsible. Genuine experimentations, radical questions, expansive projects - all running the risk of naivety, foolishness, and waste, and yet all of value to those who are trying to learn about life - seem now to belong to another age."

"Change in higher education is rapid, disorienting, and often incoherent.... Within fine art there has never been so little agreement about the `current position` of the activity, about `how things stand`."

The quantitative data collected on the art students in this study has already been discussed at some length, yet though this information has told us a good deal about the students, we have learned very little about what is probably the most important aspect of this study, how they produce their actual creative work. Some information about their knowledge and awareness of art, their preferences, their individual learning styles, their actual and preferred teaching methods was already available from the student answers in the qualitative section of the main questionnaire. These were quantified to give a picture of the spread of attitudes and abilities within the group. But they offered no details of the specific cognitive processes of individual students. They show us "that" but not "how" or "why". In fact these results highlighted a range of new questions:-

- a. is there a standard cognitive "system" for the generation of visual ideas?
- b. do different students devise their own systems for the generation of original ideas?
- c. are these systems related to any specific personality traits or cognitive abilities?
- d. how do they manipulate and develop their ideas into expressive symbols?
- e. what criteria do the students use to evaluate the progression of their work?



These are key factors in the education of any creative ability, and it was felt that the best way to collect the information which might supply the answers to these questions was through detailed interviews with individual students.

#### **4.62 STUDENT INTERVIEWS**

Twenty students, eight male, twelve female, from four FE Institutions in the North of England who were recommended as original and imaginative by their staff, agreed to talk about their approach to art and their working methods. These students were not part of the original survey.

The format of these interviews was to be completely informal, with the key issues to be raised in a purely conversational style. It was hoped that even though they were obviously "focused", the interviews would be non-directive, with the student leading the talk into areas of special interest. It was felt that this was the most appropriate method for the collection of in-depth information, and that the normal subjective bias on the part of the interviewer would not be such an issue in this particular case, as there was no specific hypothesis to prove. These informal interviews took place in the studios of the colleges at the workstations of the individual student, with their preparatory studies and completed work around and available for example and discussion. The author kept shorthand notes of the conversations which were then transcribed and sent to the individual student for confirmation/ alteration/additions. The aim of these interviews was to establish if possible:-

1. the students' general and preferred method of working
2. the origins of any style or influence
3. details of the students' preferences/attitudes in art
4. how their style/method had evolved
5. the origins of their ideas
6. their response to stimuli
7. their personal interpretation of events/ideas/themes
8. the production/evolution of graphic images
9. their use of mental imagery, visualisation
10. their approach to problem solving.

Students were asked:

- how does your work originate ?
- what were the sources of some specific ideas ?
- how were these ideas externalised/expressed/visualised ?
- what adaptation/changes/developments/evolution takes place ?
- why/how are your decisions made ?
- what are you trying to say or do through your work ?

Several general things were clarified during the interviews:-

No student had ever had any formal instruction in thinking skills.

Most students generated their ideas in response to some external stimulus.

Decisions about the development/evolution/alteration of work were almost always taken intuitively.

Students rarely had any rational explanation for the changes that they made to their work, yet were confident and comfortable discussing details of a particular work. They were all fiercely independent, yet vulnerable; determined to find their own solutions, yet needing peer and staff support. They were mostly intrinsically motivated, i.e. driven by the work, by the need to paint, rather than just "I want to be an artist", or "I want to be famous".

It was clearly going to be extremely difficult to answer the questions raised from the evidence of the student interviews alone, as the author was faced with the classical dilemmas of the interview:

1. How much are the answers what the student thinks the author wants to hear?
2. As both participants are familiar with the jargon of art, many ideas are inferred rather than stated, leading to the possibility of misunderstandings.
3. The point raised by Tuckman (1972), that there is an assumption that the person being interviewed has some insight into the causes of his behaviour.

However, further evidence of the attitudes and thinking styles of art students is contained in the study of art education conducted by Madge and Weinberger in 1973. Some aspects of their work are particularly relevant to this study, and invite comparison of results:-

- Thinking process is often more important than finished artwork (JO a.)
- Sources of ideas (JO b.)
- Open personality of the students (JO c.)
- Problems of evaluation (JO e.).

## **4.63 RESULTS**

### **a. Cognitive Styles:**

Based on their descriptions of their visual symbolic response to stimuli, it was possible to identify only one significant cognitive system which appears consistently in art students; they apparently have the facility initially to think divergently when approaching a problem, generating a range of ideas; then after evaluating their various solutions they are able to fix convergently and work at optimising the chosen answer.

Most art students think like this, perhaps because they are not only constantly searching for new and different solutions but they frequently find and set their own problems. Also the creative potential of convergent thinking has largely been overlooked by researchers in this field. Grossman and Wiseman (1993) point out the neglect of 'creative convergence', and identify two areas which have particular significance for this study:- "convergers have the ability to find value in fanciful ideas ", and " they don't work on problems which are not personally meaningful." Both these statements are descriptive of the art students in this study.

Whereas the Divergent Thinking scores from the questionnaire showed that there was no significant difference between art students and non-art students, there was a significant difference between the HE and the 6 Formers. Perhaps divergence is a maturation issue, it is this author's experience that many young art students need a great deal of encouragement and support, (after ten years of mostly convergent teaching), to open out and risk ridicule.

### **b. Individual System:**

The students seemed to feel that they developed their own individual cognitive system, though they did not call it that. They rarely thought about "thinking", but some did reflect on their generative methods. Madge and Weinberger (1973 p73) in their survey of art tutors and students, concluded that in art education clear thinking and the process of inquiry matter more than producing finished art objects. Staff placed a great deal of emphasis on "work as an analogue of one's thoughts, or as information", whereas the students found:-

"...the emphasis laid on thought and inquiry extremely inhibiting as far as producing visual work is concerned. They become very self-conscious in their work and sometimes evolve very complex theories about it. These theories are sometimes purely defensive." (p74)

They also found (p82) that even though none of the questions they asked referred to 'thinking', it came up in 60% of the answers (83% among males); for example:

"The course taught me to think and use information"

"My main gain from the course was the idea that art is not an unthinking process"

"I found out that communication and investigation of ideas was what I was interested in"

"I learnt the value of ...thinking a lot more about what I was doing".

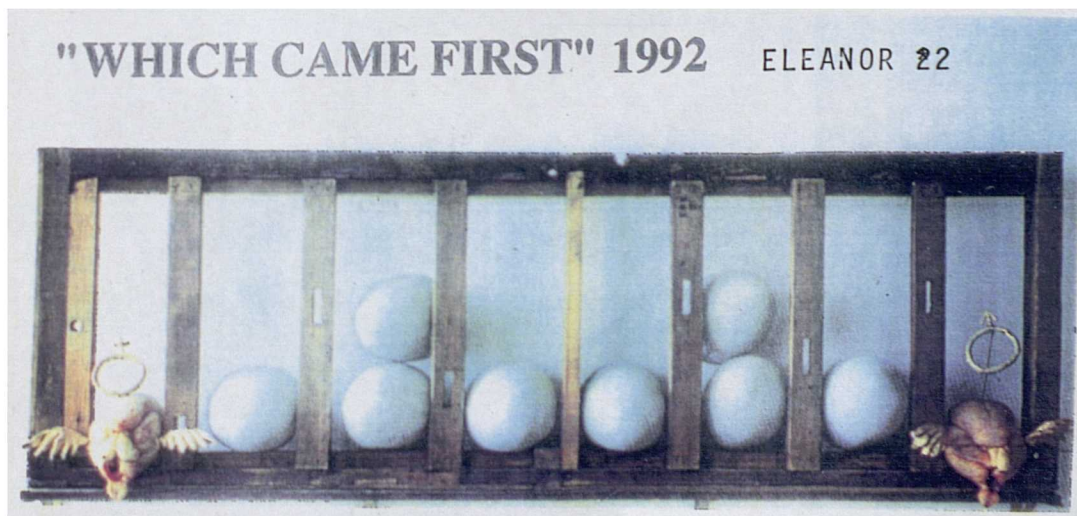
Of the students in these interviews most were quite divergent in their generation of ideas:

Anth 19: "Sometimes it is like a traffic jam of ideas ... I use quick sketches to get the ideas down ... then I play around on paper until the concept is properly formed."

Jamie 22: "I seem to be clearing my mind of some excess... I need to get it out of my system ... like peeling an emotional orange."

Eleanor 22: "There is no logical linear progression in the development of ideas. Ideas operate in cycles/networks/spirals. I work on five or six ideas at a time, and they are interactive ... there is a conceptual dialogue between myself and the work.

I collect found objects....with no real or conscious criteria, just anything that interests, involves or excites me in some way. I'm interested in the contrast between natural and man-made objects, the only relationship between them is their personal appeal to me...it's just a sort of therapeutic handling of materials".



**"I'm interested in the cultural values/status of objects, and I like to play on the built-in prejudice and assumptions they hold for us. My ideas come from the spaces between subjects...my work is more question than answer...it's a challenge to me, and I challenge the spectator.**

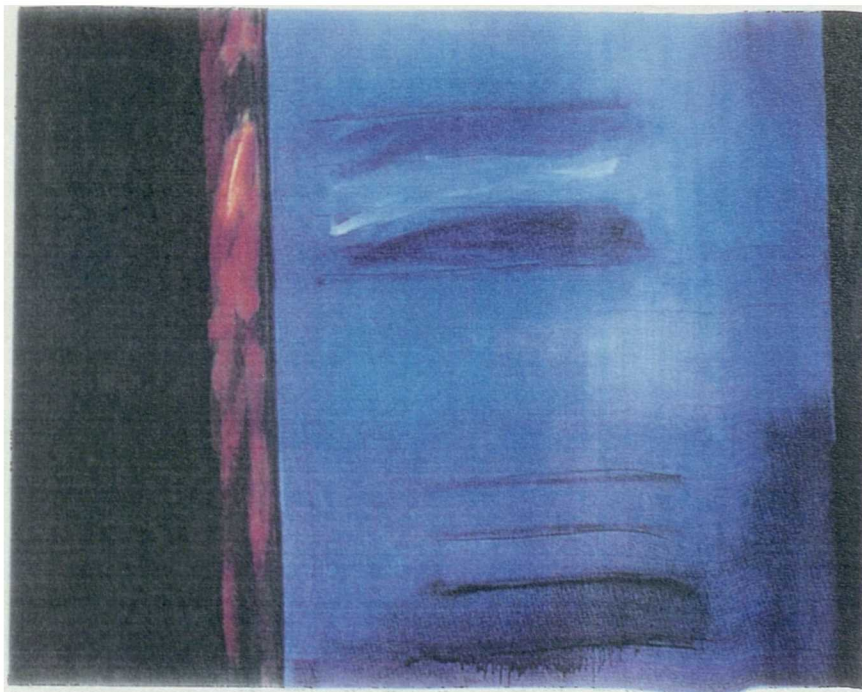
**I think that much of the personal response to domestic and natural objects comes from my love/detest relationship with my parents. I love the escapism of nature...the intuitive response to the physical world as an antidote to the intellectualisation of society.**

**I see no need to justify my work."**

**Paradoxically, however, some students did not sift divergently through their ideas but focussed on and worked through a single idea:-**

**Rachael 21: "I always give primacy to my first idea ... I never change my work."**

**Luke 23: "I work round an idea on the canvas until the point of boredom or satisfaction is reached."**



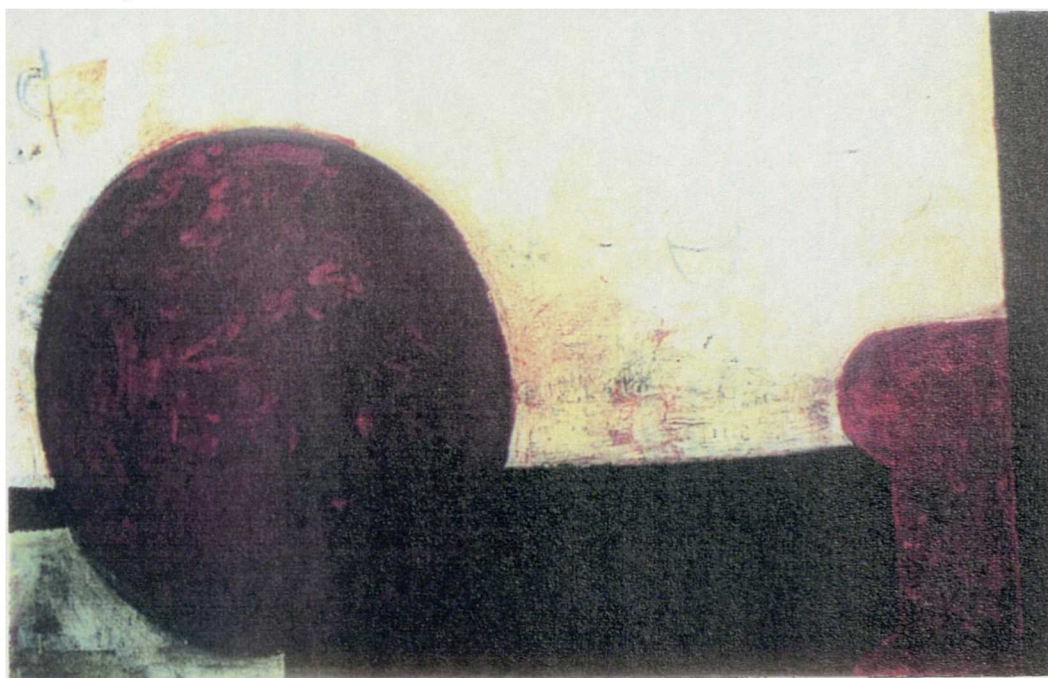
**LUKE, 23 "WAY OUT WEST" 1993**



**Bob 23 :-** "I start with a blank sheet ... then I make shapes and colours ... perhaps from a still life as the starting point ...I'm trying to create objects in space....I'm interested in the ambiguity produced by different angles and perspectives....I'm interested in the edges between forms...and between the forms and the edge of the canvas where the shapes sometimes move off into an imaginary reality.  
The decisions and judgements I make about the painting, and the changes that I make are all purely personal choice and preference...and I tend to stick with the original idea through the changes. Some of the changes are quite rapid, yet I know when it is right....that`s the end."

**BOB, 23**

**"UNTITLED" 1993**



The origins of these ideas were also diverse. Some were directly lifted from nature:-

**Lisa 20:** "I get most of my ideas extracted from nature through observation."

**Nicola 22:** "My ideas are triggered by a response to nature."

**Karl 23:** "My ideas come from observing nature."

**Michelle 21:** "My ideas come from everywhere ... from just looking."

Some came from "inside their head":

**Ian 22:** "My ideas come from subconscious associations."

**Bob 23:** "I am trying to create objects in space ... but it is a subjective, internal space ... the space inside my head."

**Gail 23:** "The image corresponds to something in my mind ... it's like giving life to something."

Rachael 21: "I get two sorts of mental image ... some evolve from emotions, thoughts ... and some can come from an outside influence."

These comments closely resemble the responses of the Madge and Weinberger students.

One of the key questions of their survey was "What are the sources of ideas in your work ?

"In answering...students had three main alternatives. Either they could point to sources external to themselves, such as natural objects...or they could emphasize internal sources, such as dreams...; or finally they could refer to both external and internal sources." p188.

Their table of results showed that:- "57% of fine art students claimed external sources for their ideas, 27% claimed internal sources, 13% had mixed, and 3% did not know". Some of the actual details of the claimed `external` sources were listed by Madge and Weinberger

- "Games ideas, concerned with perception. Kafka and Satre."
- "Anatomy diagrams...related to the language problem."
- "Books on musical theory, philosophy and Suzanne Langer."
- "Chicken behaviour"
- "Physical-biological problems which I can't define." (p190)

These echo many of the HE art students in this study who had similar sources for their ideas, and such diverse preferences in art work. The relationship is repeated in the descriptions of the `internal` sources, which were cited were "dream images, imagination, emotions, fantasies memories, riddles and nostalgia".

One really surprising result from both the Madge and Weinberger study and these interviews, was the lack of references to the work of other artists as influences.

The ideas of art students are usually images expressed in visual terms, and there has been considerable debate over many years on the issue of imagery and visualisation, (Kosslyn v Pyllshyn qv). The facility with which many art students generate visual ideas in response to some stimulus is illustrated by the experiences of Rachel (19):-

"Whatever project I'm working on, I can generate images to fit the word or idea....I can make the image change and move... I can see them clearly and in colour...I often use these images in my work...I've been thinking about space recently....now I can close my eyes and I can see imaginary planets...they are glass planets with people inside...eight identical planets in a row.

I have very strong mental visualisation....I can easily produce pictures in my head...and I have a very strong visual memory".

However, sometimes this powerful visual imagination spills over into excess, Rachel further reports:-

"I dream all the time...never daydreams, but at night...often several dreams in one night....they are clear and powerful images....Most frequently I dream about India....I also have ESP premonitions....I also dream of my previous life in Egypt as a servant of Pharaoh."

**c. Manipulation/Evaluation of Ideas:**

All the students admitted to an intuitive basis for developing ideas, and also that it is bound up with (d.) Evaluation, which is a continuous and on-going process, yet has no apparent criteria. Madge and Weinberger report (p72) that the art staff agree that "There exist certain undefined but commonly agreed on standards in art education...Students' work is criticized in relation to these standards." However, the students' response was that "since the standards are undefined, they are not sure on what basis their work is being evaluated and they become very suspicious of formal assessments. They tend to take the results far too literally, or else dismiss them as just personal opinion."

The problems of criteria and evaluation were re-stated by Heywood (1993):-

"Our late-modern culture is in difficulty with some of its key elements.....the capacity of contemporary ethical thought to cope with the continued decline in the binding force of all normative tradition and the rise of radically different value systems, the waning of any notion of historical or contemporary aesthetic order."

One result of this is the emphasis that the students now place on their personal development, and their reliance on `intuition` as evaluation.

- |            |   |
|------------|---|
| Jaime 22,  | "My paintings ... are an intuitive expression."       |
| Bob 23,    | "I know instinctively when it is right."              |
| Rachel 19, | "The decisions I make ... are always intuitive."      |
| Anth 19,   | "Any changes I make ... are always done intuitively." |
| Lisa 22,   | "The judgements are always intuitive."                |
| Clare 21,  | "My judgements are always intuitive."                 |
| Nic 23,    | "My decision making is intuitive."                    |



Even total honesty supports the intuitive system ...

Karl 23, "I have no idea how I judge things."

All the students obviously trust their own feelings and intuition, many to the exclusion of any intellectual input.

Gail 23, "I like to work intuitively ... my problems always come when I have tried to impose some intellectual idea on the work."

One student, Ian 20, did offer a possible explanation for the primacy of intuition:-

"I make changes to my work through intuitive feelings, but these are probably subconsciously learned criteria."

Perhaps the clearest explanation of the production system of the art student, including the most frequent method, and the emotional commitment to the art work, came from

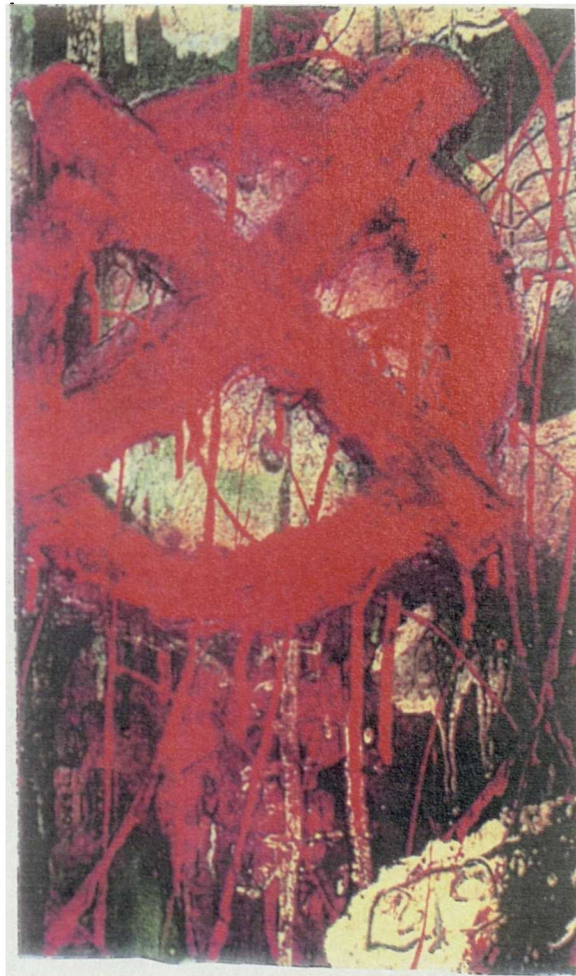
Gail 23:- "Since I learned to trust my own intuitions, I feel that my work is more whole, pure, direct; I feel entire. My painting is a visual example of something outside ... some universal existence ... a feeling. The image evolves on the canvas ... corresponding to something in my mind ...once it is there you know it is right ... it's like giving life to something that corresponds to some universal truth."



**GAIL, 23 "AN INCIDENT" 1993**

**Sometimes the plastic elements take over and rule the decision making, David 21:-**

**"Even whilst I'm preparing my board some germ of an idea comes forward....dark or light ?.....green - I feel green....look at the greens...viridian ?  
I load the brush with viridian green and make the first marks....the plastic, painterly qualities of the medium mix with the visual gestures....sometimes I let the paint flood and run....sometimes I like it thin and washed out...so it lets the other colours through.  
I work until I have no more to say...or until the paint makes me stop.  
Next day I look at it afresh and decide what I like or need to change.... this process may go on for days or weeks until I know there is nothing left to say".**



**DAVID, 21 "MY FRIEND HENRY MILLER" (detail) 1993**

**e. Personality/Learning Styles:**

In the main questionnaire the students were asked to place themselves in one of four learning style categories, AS, IW, SW, QC (drawn from the Oracle Study qv).

**AS:** Values approval of the teacher; responds to rather than initiates ideas.

**IW:** Avoids contact with teacher: initiates discussions with peers.

**SW:** Works alone: needs little teacher/peer contact: independent and determined.

**QC:** Relies heavily on teacher support/approval: prefers group activities.

It was hypothesized that creative art students would group mainly in the SW category with some in both the AS and IW groups but none in the QC group. The results showed that of the 128 students who completed this section:-

46% were SW	plus a further	6% in combined groups
21% were AS		5%
16% were IW		4%
9% were QC		0%

These responses support the interview comments about the behaviour and personality of art students within the context of the studio. Additional influences on art students often come from external sources; many students "suffer" from the vagaries of art "fashions". Great emphasis is placed during their courses on the importance of originality and freedom of expression, so they respond quickly to any new concept or movement in the arts. On the simple "Naming of Artists" test in the main questionnaire, the standard list of artists produced by 6th Form art students included a selection from Leonardo, Michelangelo, Raphael, Rembrandt, Constable, Turner, the Impressionists, Van Gogh, Gauguin, Cezanne, Picasso and Dali; whereas the HE students produced by far the greatest number of unusual answers, eg.; Blake, Bonnard, Bosch, Botticelli, Breugel, Magritte, Matisse, Millet, Miro, Mondrian, Morisot, and Munch. Also, from the section asking for influences on their work, many declared an interest in artists who have yet to establish an international reputation, eg.: Sonia Bryce, Tricia Gillman, Anselm Keifer, Frida Khalo, Fiona Rae, and Cindy Sherman.

This shows that they have studied not only a wide range of work, but that they have been

encouraged to respond to as yet unproved or undeveloped ideas, encouraging open-mindedness but leaving them vulnerable to staff and peer pressure. This is reinforced by the Self-actualising data from this study, with art students scoring 'significantly' higher than non-artists on the three items covering this aspect (Appendix O):-

Item 4 : It is important for me to retain my individuality ( $p < .00$ ).

Item 15: I like to learn new things ( $p < .00$ ).

Item 19: I resist stereotyping labels ( $p < .04$ ).

In general the Madge and Weinberger study supports this view that the personality factors of art students usually show extreme openness and individuality:-

"The concept of independence as a student value combines, therefore, the independence of each student in his own right and the independence of of artists...as a group with values distinct from those of society as a whole. ....the idea of being different, and of accepting and developing this difference, is so pervasive and so characteristic..." (p104)

They welcome new ideas often with what Koestler (1959 p518) described as:-

"On the one hand scepticism, often ... iconoclasm in their attitude toward traditional ideas, ... but an open-mindedness that verges on naive credulity toward new concepts.

Many students commented on the importance for them of discussing their ideas with their peers, which might contradict the idea of most students as SW's (needs little peer contact), unless these students are among the 21% who belong to the IW group (initiates discussions with other peers):-

Liza 23, "I value the freedom to speak to other students."

Rachel 19, "I like to throw ideas around with other students."

David, 20, "I need to ask advice from my friends."

Ian 22, "It's good to have discussions with friends who are available for help with problems."

These comments are supported many times over in the reports of other students from the main study describing the art lessons which produced their best work:-

RP:- "...throwing ideas around in discussion"

GJK:- "When I was allowed to to develop my ideas,and talk to my friends"

- PL:- "Discussing ideas with other pupils"
- BH:- "...friendly atmosphere, with discussion amongst friends"
- JH:- "...discussing ideas with other pupils in a relaxed atmosphere"

#### 4.64 TEACHING STYLES / METHODS

The importance of the teacher's style, and the methods used, have been the subject of a number of studies, (Cronbach 1984, Hudson 1966, etc), but rarely has any research been applied specifically to the teaching of art, and most art teachers believe they operate an individual system which they have personally evolved over the years.

In the main questionnaire, the students were asked to identify the favoured style(s) of the secondary school art teacher who most influenced their work. They were given six categories:-

- Authoritarian:** gives instructions, has fixed ideas.
- Democratic:** discusses issues and opinions.
- Non-Interference:** free expression.
- Information Processor:** imparts facts/knowledge.
- Problem Solver:** sets problems.
- Inter-Active:** encourages open discussion.

Descriptions of the art lessons received at their secondary schools showed that 81% of the students considered these influential teachers to be "Democratic" or "Non-Interfering", whereas the remaining 19% believed their teachers to be "Authoritarian" and "Prescriptive". 71% of students believed the aim of their teachers was to help them develop their individual abilities through Inter-Active discussions, whereas 29% believed that their teachers were more concerned with imparting their own knowledge and solving set problems.

The comparative importance of teacher intervention was also discussed in the main questionnaire, and the results showed that only 25% of Higher Education students required the input of staff, whereas in the Sixth Form group nearly 70% valued an input

from their teacher, and many of these needed the staff to actually kick-start their ideas by providing specific stimulus and direction.

This contrasts sharply with the HE students, 50% of whom actively reject staff input:-

- Bev 20, "I prefer to think things out for myself, not to be told."  
 Mary 22, "My best work is always done by myself."  
 Lisa 21, "I like to work alone, with no help from the teachers."

This attitude could just be due to maturation, with the older students requiring less teacher approval, but it does also reinforce the results of the personality questionnaire which showed the HE females to be strongly independent.

Students were also asked to categorise their art lessons under one of more of fourteen labels, from the Renzulli and Smith (1978) Learning Styles Inventory (Appendix 4.2), then write descriptions of actual lessons. Six methods accounted for 84% of lessons:-

- Projects:** work explored/extended/researched outside the classroom.....32%  
**Independent Study:** working without teacher intervention.....26%  
**Peer Tutoring:** one to one teaching by pupil to pupil.....10%  
**Open Discussions:** group exchanging/debating ideas and opinions.....6%  
**Self Assessment:** constructive self-analysis/criticism.....5%  
**Counselling:** listening/questioning/advising in a caring situation.....5%

However, when asked which method produced their most creative work the students

- listed:-  
                                   **Independent Study**.....53%  
                                   **Open Discussion**.....18%  
                                   **Projects**.....12%

This reinforces their preference for independent working methods and also their need for peer group evaluation and endorsement. Further evidence is provided by their written descriptions of the types of lesson which produced their most creative work:-

- CEB,18, "Being able to do what I wanted under observation of the teacher, along with discussion of alternatives."  
 RAG,19, "When I was left on my own to do exactly what I wanted."

IWS,18. "Just working by myself,or with a few friends,with the teacher available

RDF,18. "After preparing my own ideas, I was allowed to initiate and develop these with the approval of the teacher."

CH,19. "Working under my own initiative on individual projects, with help available if I want it."

PT,18. "Working on my own without help or ideas from anyone lets me develop my own thoughts and express them."

KE, 18. "Working on my own usually sparks my imagination most effectively."

WW, 18 "Quiet lessons, with no contact with teachers."

#### 4.65 CONCLUSION

These interviews and qualitative analysis were primarily conducted to enhance the major aspect of this study,the application of creative thinking in the visual arts, and secondly to answer the five fundamental questions about the production of original works of art.

The question of the cognitive systems operated by art students, the development of their ideas and their criteria of evaluation are not only all closely inter-related. but are also inter-active, in that they can influence each other. The only consistent cognitive system identified in these art students was the ability to think initially divergently, and so produce a variety of solutions, then after evaluation to switch to convergent mode and concentrate on the development of one specific idea. The student descriptions of generative process did show further individual systems within the divergent label.

The evaluation process, and the criteria invoked by these students, were largely intuitive.

The problem of assessment criteria was also reported by Madge and Weinberger (p77) as "the most difficult to answer", and labelled the student answers of `personal`, `aesthetic` and `intuitive` criteria as a single group, containing the reponses of 47% of art students.

When these results are put along side the comments of the tutors in the Madge<sup>and Weinberger</sup> study, who asserted that "...there are no fixed criteria on what constitutes art....there exist certain undefined but commonly agreed standards...", the complexity of the problem is clear to



see, and it would need a far more detailed study than this to provide a substantive answer.

With regard to the relationship of cognitive style to personality, it is not possible to identify any causal relationship, probably because personality is itself an aspect of cognitive style (Curry 1983). However, there were frequent examples in the interviews of correlation between divergence and independence, supported by the quantitative results of the main study which were significant at the level of  $p < .00$ .

The element of independence is echoed time and again by the students in this study, which supports the findings of Madge and Weinberger (labelled as personal development, individual freedom, and self-direction) that 98% of college staff and secondary teachers saw the furthering of "personal development" as the value of art education, a viewpoint shared by 92% of the students.

So even if we cannot identify a single teaching method that will guarantee creative results every time, the comments of these art students could provide the basis of a system that could give some improvement in imaginative response.

- a. we should encourage initial divergent thinking (without abandoning the positive aspects and discipline of convergence).
- b. we should encourage individual response and choice of solution.
- c. we should support individual direction of thinking.
- d. we should encourage positive, objective evaluation, without discouraging intuitive subjective assessment.
- e. we should encourage learning from failure, by the acceptance and objective assessment of mistakes. ( Carl Rogers` "psychological safety")

If a teaching intervention is to stimulate a creative response from the students, then the first three elements of this list should form the basis of that intervention. The other elements cannot obviously be part of a brief formalised `test`, but nevertheless play a major role in the long term development of student creativity.



## CHAPTER 5

### 5.0 ART TEACHING INTERVENTION

#### 5.1 Introduction

The aim of this art teaching intervention was to attempt to identify those aspects of art teaching which actually influence the production of imaginative and original work; then apply them in a controlled situation, measuring the outcome for any improvement in the levels of creativity. The basic hypothesis was that if two equivalent groups of students were given different teaching interventions, and their results compared and found to be different, then the intervention could be claimed to have influenced the outcome.

"If altering a process variable can demonstrably change the outcomes, this establishes an important finding as well as the validity and reliability of the measures." (Fitz-Gibbon 1990 p291).

Before planning an "intervention" that could be successful it was necessary to establish the current practices of art teachers, and if possible extract the single most effective teaching method. For this project to have any real relevance for art education, it must be founded on current practice in the art room. The first step was to identify discrete methods of teaching. Renzulli and Smith (1978) in their "Learning Styles Inventory", identified and listed nine distinct "Modes of Instruction":

<b>Projects:</b>	work explored/extended/researched outside the classroom
<b>Drills/Recitation:</b>	memorizing facts/information by repetition
<b>Peer Tutoring:</b>	one to one teaching by pupil to pupil
<b>Discussions:</b>	group exchanging/debating ideas and opinions
<b>Teaching Games:</b>	play controlled by teacher to develop learning skills
<b>Independent Study:</b>	working without teacher intervention
<b>Programmed Instruction:</b>	audio-visual teaching package
<b>Lecture:</b>	formal oration by teacher to passive group
<b>Simulation:</b>	model or analogy of `real` situation for pupil participation

Using these nine methods as a starting point, a brief questionnaire was sent out to teachers in primary/secondary/tertiary education asking for their definitions and interpretations of

these titles; and whether they used any other teaching methods. Forty responses were received and an optimum definition of each method was formulated, based on a consensus of most common usage. Five additional methods, frequently used in English schools were also supplied by the teachers:-

<b>Counselling:</b>	listening/questioning/advising in a caring situation
<b>Self-Assessment/Awareness:</b>	constructive self-analysis/criticism
<b>Critical Evaluation:</b>	relating work to given criteria, learning to discriminate
<b>Drama Techniques:</b>	exploring attitudes/issues through role play/improvisation
<b>Open Inter-Active Learning:</b>	negotiation about the organisation/process of learning

A "Teaching Methods" page (Appendices 4.2/5.2) was then produced for both art student and art teacher questionnaires. This page listed the fourteen methods and asked for three responses:-

A -which of these methods were used by you?

B -which was used most frequently?

C -which produced the most original / imaginative work?

There was also a page asking for written descriptions of these lessons (Appendices 4.2/5.2). The immediate results showed quite clearly that the teachers' perceptions of their own lessons were confused. Rarely did the descriptions of their most effective lesson (C), match their choice of their most effective teaching method.

The most common methods identified by art teachers were:- Projects, Counselling, and Open Inter-Active Learning. However, their lesson descriptions all showed only slight variations of the same method, "introduce some visual stimulus, then ask the students to respond". For example, PH, (Sec,M,30): selected Critical Assessment/Awareness as being the teaching method which produces the most original/imaginative work from his pupils, then he described a lesson which produced the most original and imaginative work as "Introducing an idea or theme as a stimulus, then moving round the class assisting".

Also, RL, (Sec,F,50): selected Open Inter-active Learning as her best teaching method, then described her most productive lessons as being "pupils responding to a resource

material introduced by me". (further examples are listed in Appendix 5.3)

These findings support the research of Sharp and Durst (1987), who found that primary sector art teachers perceived their role as little more than giving pupils a title, providing materials and allowing the assignment to progress without any more guidance or evaluation. A similar attitude in secondary education had been criticised earlier by Barkan (1962 p16) who complained that teachers often measured their effectiveness by the number of new media they provide, and by Eisner (1972 p24) who pointed out that though pupils are initially stimulated, they are never allowed time to develop any mastery of the materials or media to enable them to be used aesthetically. Supplying new ideas/stimulus/media as a substitute for teaching has evolved in this country out of the Lowenfeld/Read axis which claimed the function of visual art to be a vehicle for personal expression. This has produced a definition of art teaching as "...seeing the child's development in art as an unfolding of latent potential, a releasing of innate abilities" Forrest (1969 p23). According to Southworth (1981 p25) this has caused teachers to adopt a passive role of non-intervention, and simply provide materials and technical assistance. The reluctance of adult art teachers to get 'involved' with their pupils' work is partly explained by the entrenched 'child-centred' philosophy, and partly, though cruelly explained by Lansing (1971):

"Most people who teach art do have ideas about the nature of the subject, but their ideas are often logically weak, inconsistent, or vague."p31

This jibe at art teachers does presume that there is one finite thing that art is, and that there is one cohesive theory of art that everyone adheres to, which with contemporary post modern attitudes to culture is most unlikely. This lack of consistency amongst art teachers, and the apparent lack of any strong philosophic or psychological direction, was one of the main reasons for the initiation of this study.

Obviously there is much to discuss and debate about the specifics of art lessons, let alone teachers' perceptions of their own lessons. Nevertheless, a consistent factor in the reports

of all the teachers, supported by informal discussions with many others, was the use of a direct stimulus, visual or verbal, to promote an original, imaginative response from pupils and students. But nobody has ever really evaluated the effectiveness of this method. Yes it works, but how or why? The assumption has always been 'more stimulus, more results', so this was an issue that seemed right for examination and explanation.

So, after much reading and talking to teachers, a teaching intervention was evolved to test the effectiveness of visual stimulus. It was framed in the two most common teaching methods, "Project", involving a verbal presentation of stimulus illuminated by analogy; and "Open Inter-Active Learning", involving promotion of the stimulus through drama-based emotional involvement. The visual stimulus was set through four themes:- Creatures, Environment, Heroes, and Inner-Space; subjects which were thought to offer a wide range of opportunities for self-expression.

Teaching by "analogy" was selected because it is the most common method 'within' all teaching strategies. Also, as many writers have stressed the importance of motivation to creativity, increased emotional involvement through use of "drama techniques" was expected to provide an effective method of increasing pupil motivation.

This scheme was tested on a small group of pupils (19) in a secondary school and a significant defect showed up immediately. Time was going to be a major problem.

Implementation of this scheme was going to involve Year 11 examination pupils in more than six hours of work. Discussions with other teachers quickly confirmed that this was quite unacceptable.

Considerable re-thinking was required to devise and develop a new system which would still maximise the range and variety of stimulus offered yet minimise the time involved.

The simplest way of saving time in this experiment was to drop the comparison of teaching methods and concentrate on evaluating the effectiveness of the different stimuli.

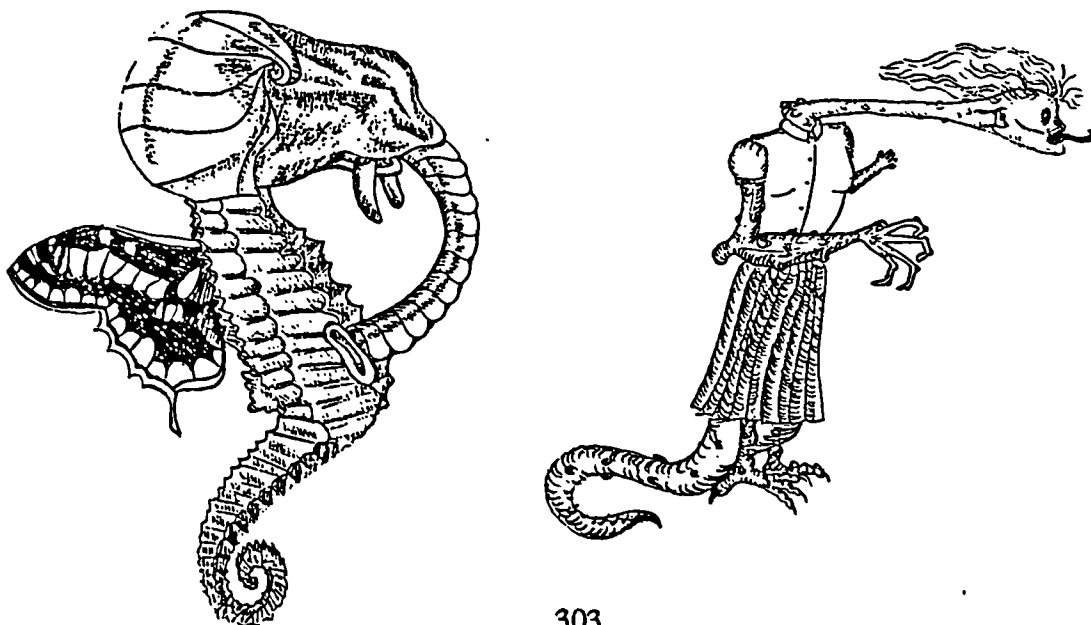
Obviously, some particular teaching method had to be used as a promotional aid for the

stimulus, and it was decided to use a programmed audio-visual package. This would control the actual presentation of the stimuli, give it some formal "status", and have the added bonus of eliminating different "teacher effects". Though the package would still be presented to the students by their own teacher, variability in the presentation was reduced by the power and quality of the package, and controlled to some extent by the enthusiasm for the project of each teacher, who had declared their interest in both the outcome of the tests, and the of responses of their pupils to new situations and stimuli.

The "Original Image Production" OIP tests in the student questionnaire had shown that the students were capable of producing exciting, original ideas on a small scale in a short period of time. So a variety of stimulus material, visual, written, spoken, and musical was collected and adapted, and a small compact "Test Pack" consisting of a series of timed drawings on different themes, supported by different types of stimulus. Restricting the time-scale for each drawing reduced the possibility of the influence of drawing skills on the results, because there is less time to develop the idea or polish the work.

It was packaged as ten tests, five pieces of music and five written stimulus ideas, which were then tested for response through various small scale pilot schemes.

These tests showed very quickly two important issues. The first was the high quality of much of the original work produced in response to the stimulus pack: for example-



The second issue concerned the problems facing the production of a complete test package for all pupils. When given a choice of subject or stimulus, some ideas proved much more "popular" than others. When given no choice, and being asked to respond to all items, some students produced only stereotyped responses to certain items. In the case of some of the musical tests, subsequent "blind" markers were able to identify the original music from the stereotyped response; eg. the theme from "Mastermind" produced innumerable black armchairs, "How the West was Won" produced galloping horses or saloon doors, and "Albatros" (currently a TV holiday commercial) produced a forest of palm trees.

## **5.2 The Interventions: Pilots/Revisions/Production**

Eventually, after much experimentation, a workable system emerged for testing (Appendix 5.4). The format of the system was basically very simple. All instructions and audio stimulus were contained on a cassette tape, with timed intervals for each drawing. The use of a pre-recorded cassette helped to standardise the presentation of the stimulus, and minimise the possible "teacher-effect". The pupils were asked to produce ten drawings on given themes over a period of thirty minutes.

Each pupil was given a stimulus booklet, containing visual or written material. The booklets were different for each group. The Control group (C) had stimulus that was basically informative, whilst the Test group (T) booklet contained much more dramatic and imaginative representation of the the same subjects (Appendices 5.4). For example, in Item 6, the Test group were given a choice of four complete and quite evocative poems, whereas the Control group had only the titles as stimulus.

The given Themes for the drawings were:-

	T group	C group
1. Creatures.....	No stimulus	No stimulus
2. Creatures.....	Visual stimulus	Visual stimulus
3. Figures in action.....	Visual stimulus	Visual stimulus
4. Landscapes.....	Visual stimulus	Visual stimulus
5. Story: Wolf children.....	Spoken stimulus	Spoken stimulus
6. Four Poems.....	Written stimulus	Written stimulus
7. Music: Theme from 2001.....	Aural stimulus	Aural stimulus
8. Song: Ode to Billy Joe.....	Multi-stimulus	Aural stimulus
9. Haunted House.....	Multi stimulus	Written stimulus
10. Aztec sacrifice.....	Multi stimulus	Visual stimulus

These themes were chosen because they were deemed to cover the range and type of subjects normally tackled in art lessons.

"Creatures" was selected because this type of fantasy art is highly popular with adolescents, and offers lots of expressive scope with few limits.

"Figures" and "Landscapes" were chosen because they are the basic planks of adult art and much of art education; and if this project is to work then it should influence these areas.

Literary themes like "Poems" and the "Wolf-children" story, are standard methods of extending the art work of pupils.

"Music" was chosen to eliminate any literal visual references contained in most texts.

The last three items, "Billy Joe", "Haunted House", and "Aztecs", were included because in each case they offered strong examples of combined stimuli, the music, words and images were all powerful statements and worked well together or in isolation.

The package was then pilot tested on 48 Year 11 secondary pupils who were all studying GCSE Art. As it was only the feasibility of the "Stimpack" that was being tested, no pre-test or random assignment of subjects was carried out. The first group to arrive were designated T as the test group, and the second group were given the C or control stimulus.

The operation of the system was entirely successful. All the pupils completed the tests within the set time, and few had difficulty understanding the instructions. Many of the

drawings produced were interesting and exciting, though there was an occasional blank page where the pupil was unable to find any response to a particular theme or stimulus. These stimulus booklets took a great deal of work to produce, but all tests are worthless without reliable and valid evaluation. Traditionally, the assessment of artwork by teachers has been through subjective responses or vague aesthetic theories; usually based on the art teachers' experience after long exposure to the implicit values of art. So to test the consistency of this intuitive response, a set of ten drawings (Appendix 5.5) was compiled, all on the same theme of "Fantastic Creatures", selected from those produced during the earlier pilot tests. This sheet was then sent to twenty teachers with the request for the drawings to be marked out of ten for their imaginative and original qualities. The results of these assessments were remarkably consistent, with the highest marked two drawings and the lowest marked four being clearly discriminated. The middle four drawings though marked closely together, proved to be impossible to rank, probably because there was no difference in quality between them. The statistical degree of association between the judges' rankings was measured using Kendall's coefficient 'W' (Appendix 5.6), further testing using chi square showed that the probability of these results being due to chance was  $p < .00$ .

Though the results of this intuitive marking were fairly consistent, they were not considered reliable enough for a detailed objective analysis of the test work which would highlight the relative values of different stimuli. So the Jellen and Urban (J/U) system of drawing analysis which had previously been modified to analyse the OIP drawings in the Art Student Questionnaire, was adopted to provide twelve criteria which were reasonably objective (Appendix 5.7 ). The original J/U system had proved unable to discriminate between the work of more mature art students, and the modification of the system was principally aimed at increasing the scores for more imaginative work, thus improving the discrimination between work of a consistently high standard.



These pilot tests showed that the idea of offering different stimuli to equivalent groups of secondary art pupils, and then measuring the effect of the stimuli on the imaginative drawings of the groups, could be effectively studied. So it was decided to go ahead on this basis, aiming for 100+ pupil subjects in four or five schools.

The initial hypothesis for this project, (H1), was that there would be a difference in the scores for imaginative drawings of equivalent Test and Control groups. Further analysis of the project up to this point offered additional hypotheses:-

- H2. The choice of a particular "Theme" is a major influence on the quality of imaginative art work.
- H3. The quality of the stimulus material is a major influence on the imaginative quality of the resultant drawing.
- H4. The most significant factor in the production of imaginative artwork is the innate/initial creative ability of the individual pupil.

### **5.3 Data Collection and Analysis of Results**

To produce randomly equivalent Test and Control groups for this experiment, a preliminary assessment of their "pre-test" creative ability was made by analysis of the results of a shortened version of the original student questionnaire (qv). This paper was given to 150 Year 11 pupils at four schools. The answers were assessed and the pupils randomly assigned, within each school, to equivalent groups on the basis of their combined scores on 3 items:-

- Original Image Production OIP
- Creative Personality
- Art Awareness

The groups were then blindly assigned as either Test or Control, with relative mean totals of 72:71 .

The actual interventions were delivered by the class teachers to minimise the risk of examination nerves; though this abdication of responsibility produced its own problems, when due to timetabling difficulties, absences etc. the tests were not always administered to the correct pupil, thereby unbalancing the random equivalence of the groups.

To counteract this problem and produce equivalent sets for marking, where possible paired equal scorers from each group were exchanged, on the basis of their test scores and questionnaire answers. As more pupils had been given the test stimuli than the controls, those pupils who could not be paired were discarded, leaving a sample population of 96. As the marking of the tests was all conducted by the author, particular care had to be taken to ensure that all papers were assessed "blind". Separate answer sheets were returned to the marker with only pupil names and schools on the cover. Details as to which pupils had taken which test were kept separate until all the marking was completed according to the given criteria. Then the scores were assigned to either Test or Control groups and the results computed for means and standard deviations of the groups, which were then t-tested for any significant differences.

**TABLE 29: TEST and CONTROL GROUP MEANS on 10 DRAWINGS**

Title	Test Group		Control Group		t	SS
	mean	SD	mean	SD		
1. Creature 1	9.50	1.2	9.64	0.8	(.65)	.51
2. Creature 2	9.17	1.0	8.34	1.6	3.00	.00*
3. Figures	6.50	2.1	7.10	1.6	(1.57)	.12
4. Landscapes	7.04	1.9	6.40	1.6	1.79	.08
5. Wolf Story	7.93	1.5	7.28	1.6	2.06	.04*
6. Poetry	5.80	2.6	6.20	1.7	(.90)	.37
7. Music	7.28	1.8	6.98	1.9	.80	.43
8. Billy Joe Song	7.07	2.3	7.94	2.1	(1.97)	.05*
9. Haunted House	6.96	2.4	6.50	2.2	.97	.34
10. Aztecs	6.54	2.4	6.30	2.0	.54	.59
Overall 10 Items	7.38	1.0	7.27	1.0	.56	.58
Last 3 Items (8,9,10)	6.86	1.8	6.91	1.7	(.17)	.87

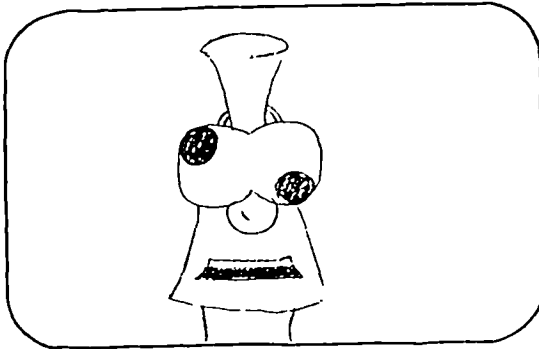
The initial ranking of the pupils from their OIP Test score on the questionnaire produced two groups with identical mean scores of 7.10. The first drawing of the intervention was "stimulus free" and served both as confirmation of the group equivalence, and also provided a base score for all participants. The mean scores of the Test and Control groups on this item were 9.50 and 9.64 respectively, not SS ie.  $p < .51$ .

**Drawing 1 : FANTASTIC CREATURES**

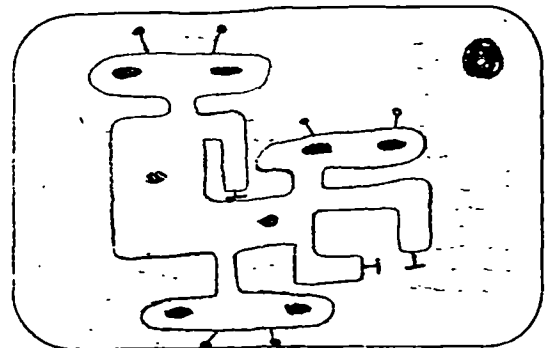
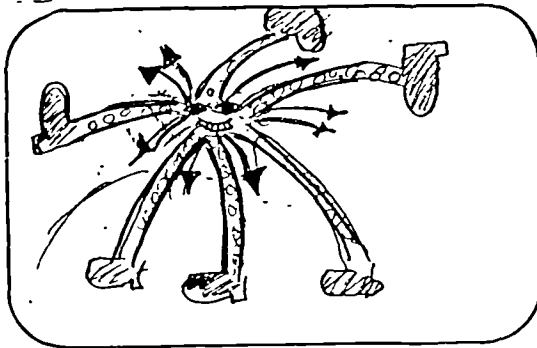
"Imagine you are an astronaut and your spaceship has landed on an unknown planet in another galaxy.

What sort of fantastic creatures do you think you might see?"

TEST Group



CONTROL Group



In the earlier OIP Test, the students had no theme or title to work from, but to produce original ideas in this experiment they had to overcome the subtle stereotypes implicit in the titles, and go beyond the obvious responses. Here they had to respond to specific restrictions in themes, to test whether the theme itself was a stimulus or restriction.

It was expected that they would use the initial extra stimulus provided to produce a drawing that went outside the obvious literal responses to the themes; and though many students merely took the easy option of the stereotypes (perhaps inhibited by the "exam" conditions), many of them did not, and produced work that was exciting and unique.

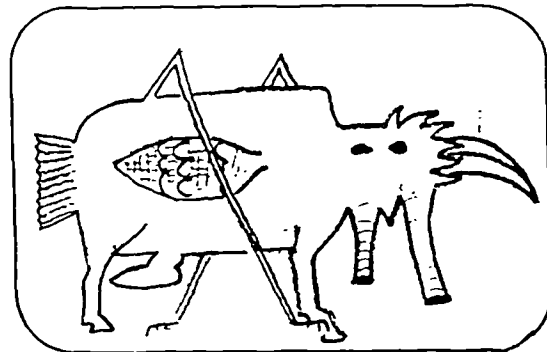
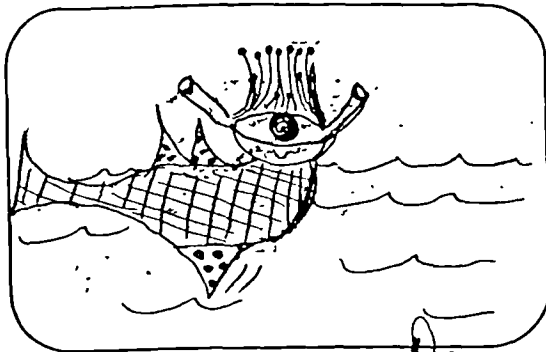
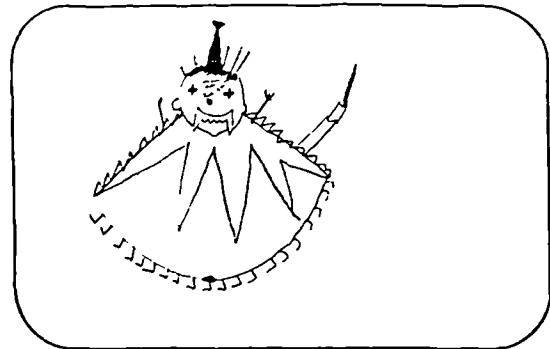
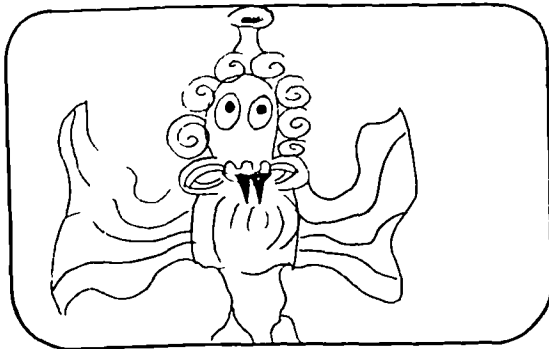
For the second drawing, the theme was repeated but this time the pupils was given differentiated visual stimulus.

**Drawing 2 : FANTASTIC CREATURES 2**

"Look at the illustrations of animals in your test booklet. These are the sort of creatures which already exist on our planet. Try to draw an entirely new creature, as fantastic as you like, one that no-one has ever seen before. You may use bits of existing animals if you need to."

TEST Group

CONTROL Group

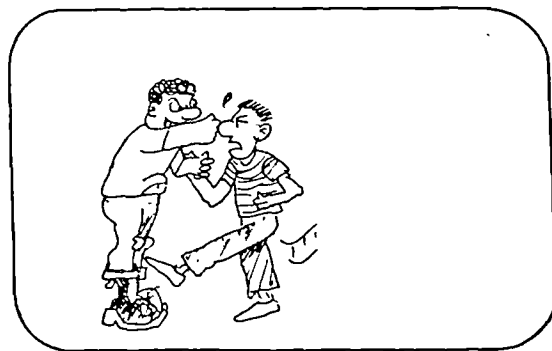
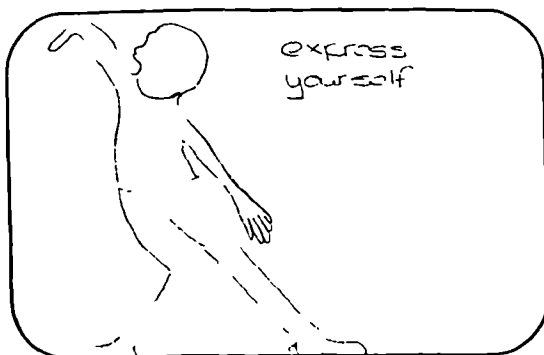


The following drawings are shown as illustrations of the themes, and are a mixture of Male/Female/Test/Control groups.

**Drawing 3 : FIGURES IN ACTION**

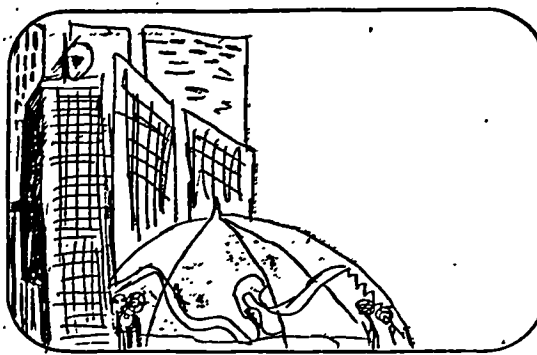
"Draw some human figures in action, playing some sport, dancing, or fighting. Look at the drawings and photographs you have been given.

Try not to copy these figures but you may use them as starting points."



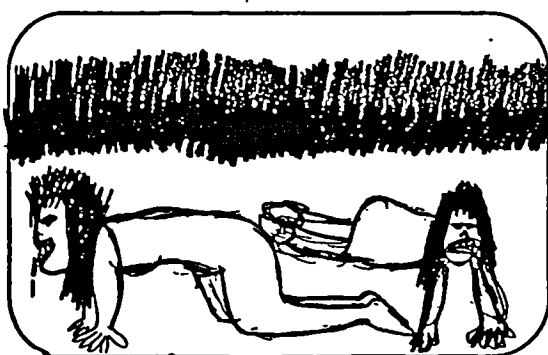
**Drawing 4: LANDSCAPES**

"Draw either an urban townscape or a rural landscape. Look at the pictures provided and the range of subjects and styles of presentation."



**Drawing 5: WOLF CHILDREN STORY**

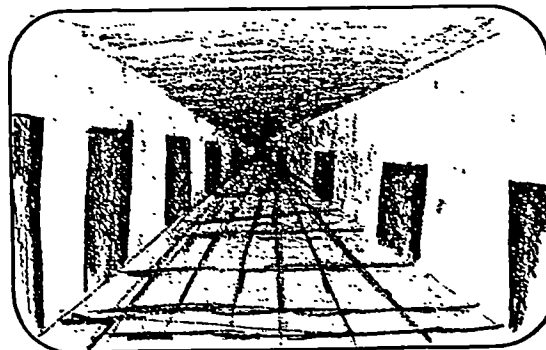
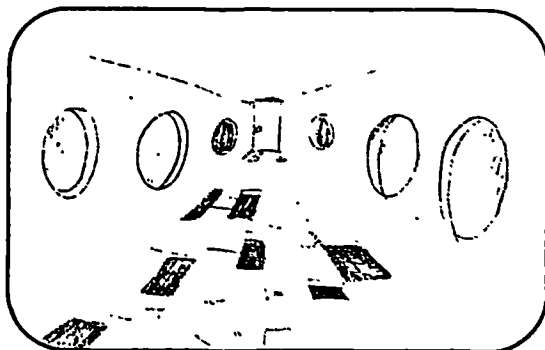
"You are about to hear a true story. Listen to this story on the tape, and produce a drawing which shows what you believe to be the most interesting or dramatic aspect of the story."



**Drawing 6: FOUR POEMS**

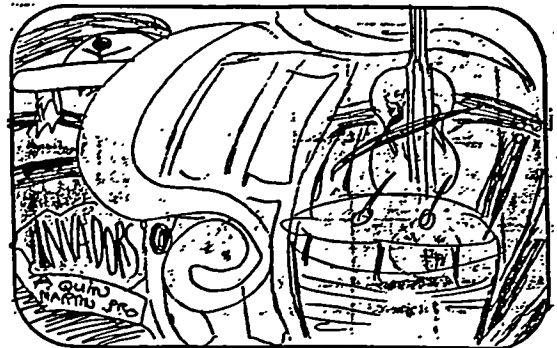
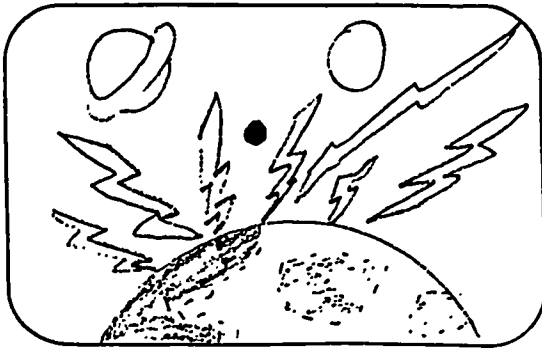
"Read these 4 poems and choose any one to illustrate the theme or idea that most interests you."

A cold day  
with a heavy  
fog  
the sun  
is hidden  
behind the  
clouds



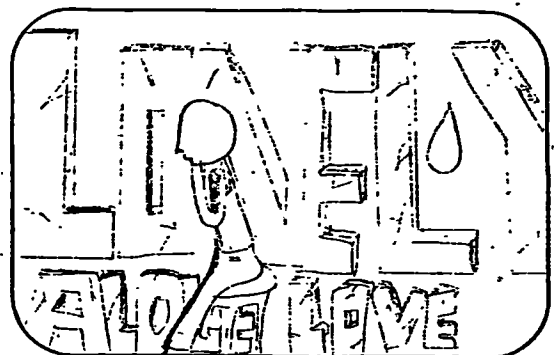
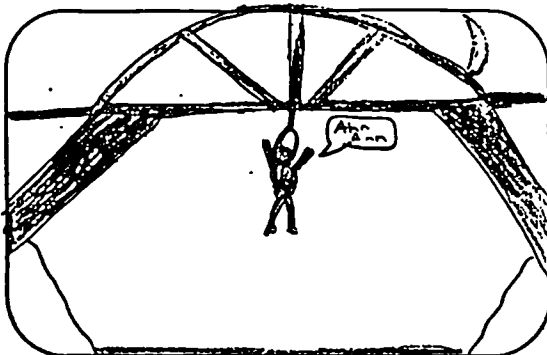
**Drawing 7: MUSIC : THEME FROM 2001**

"Listen to this piece of music and draw whatever images come into your head whilst it is playing."



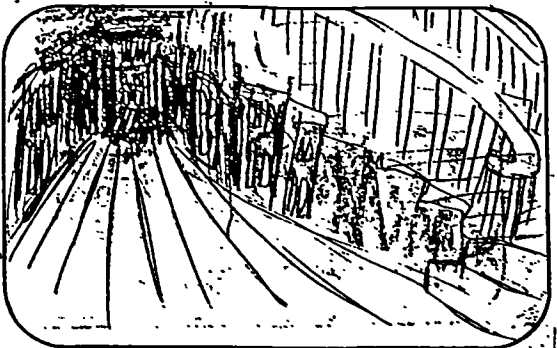
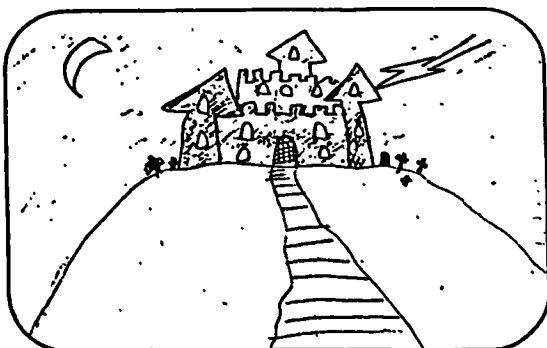
**Drawing 8: SONG : ODE TO BILLY JOE**

"Listen to this song. Produce an image which illustrates the theme of the song, or the part of it that you feel is the most important. When the song has finished look at the pictures and lyrics you have been given."



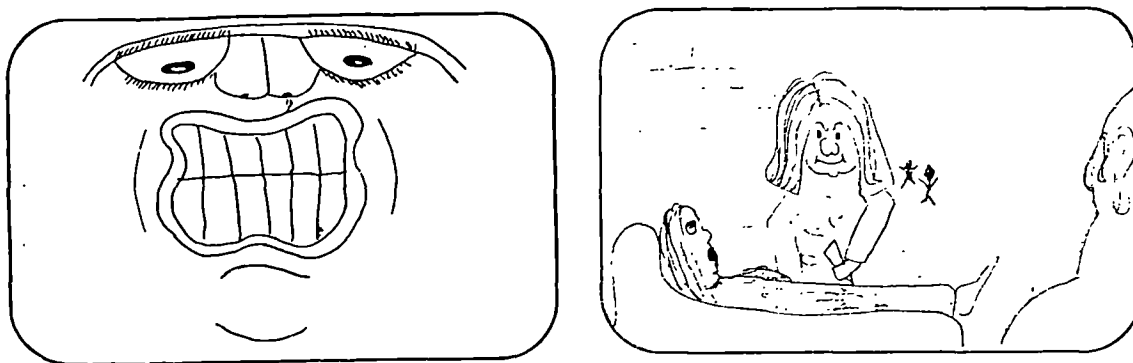
**Drawing 9: HAUNTED HOUSE**

"Read this piece about the haunted house and think of the images it produces in your mind. Listen to the music and look at the pictures, then draw your ideas."



### Drawing 10 : AZTEC SACRIFICE

"Look at the drawings and photographs of Aztec civilization. While you listen to the music, read the account of an Aztec sacrifice. Produce your own drawing of some aspect of Aztec life."



The initial hypothesis H1 of this experiment was that there would be a statistically significant difference between the results of the Test and Control groups. On the overall total score for all ten Items the results were almost identical, with means and standard deviations of 7.38 (1.0) and 7.27(1.0) respectively.

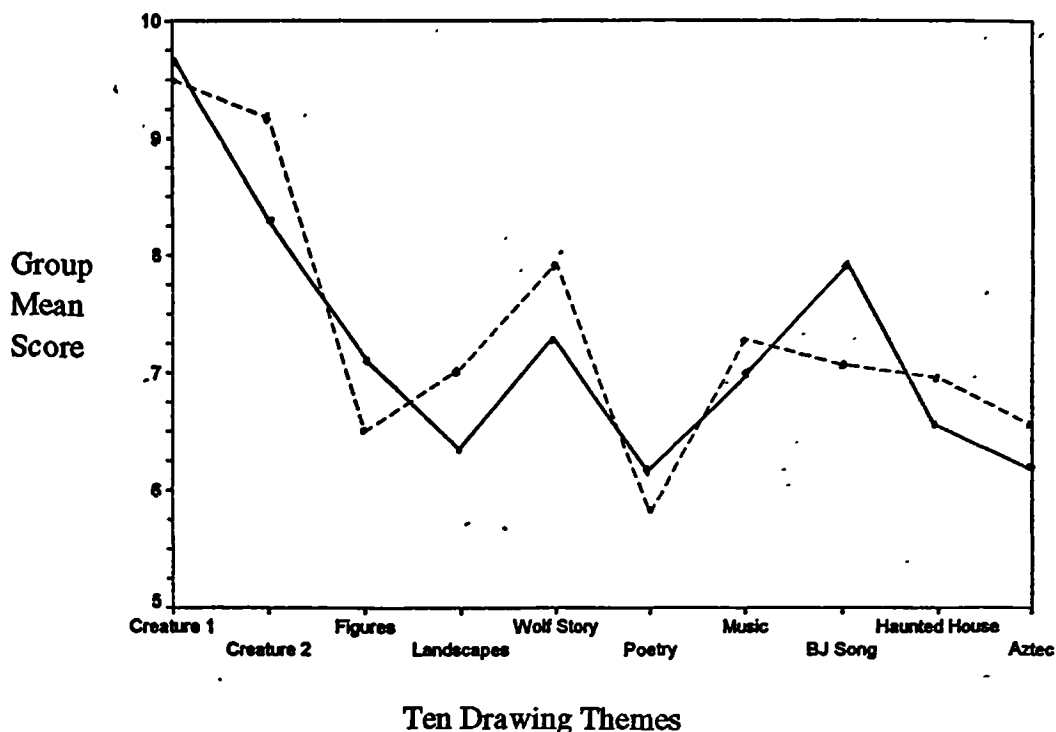
Even when the item scores were analysed individually, only two themes, "Creature 2" ( $p < .00$ ) and "Wolf Story" ( $p < .04$ ) are SS in favour of the Test group, with "Billy Joe" in favour of the Control group at the  $p < .05$  level.

The inevitable conclusion was that the stimulus sets simply did not discriminate. The extra stimulus did not contribute to additional originality or imaginative output.

The second hypothesis H2, was that the choice of a "Theme" or a subject for study would be a major influence on the level of the outcome. If H2 was correct, then the scores between the themes would differ, whereas the scores between the test and control groups might not. Also if all ten themes produced the same level of response then the graph G1 would show two horizontal straight lines.

**GRAPH 1. GROUP MEAN SCORES on TEN DRAWING THEMES**

All students n= 96    TEST Group - - - - -    CONTROL Group - - - - -



The paths of the two groups follow similar patterns, with some themes producing high mean scores and some producing work that scored up to 25% lower. Also there are few significant differences between the actual mean scores on the same item. Of the stimulus items, only three produced a significant level of difference between the groups:

	Test Group		Control Group		t	SS
	mean	SD	mean	SD		
Item 2 Creature 2	9.17	1.0	8.34	1.6	3.00	.00
Item 5 Wolf Story	7.93	1.5	7.28	1.6	2.06	.04
Item 8 BJ Song	7.07	2.3	7.94	2.1	(1.97)	.05

These results would appear to lend support to the hypothesis that the choice of theme can often have greater influence on results than the quality of the stimulus provided within that theme, which has consequences for the third hypothesis H3, was that the "quality of



the stimulus material was a major influence on the imaginative quality of the response".

The fundamental theme of this intervention as reported by art teachers and students, was that the provision of stimulus was a major element in the teaching methods employed in most art lessons. Also in these reports was the general assumption that the quality of the stimulus material was important for the imaginative content of the resultant drawings.

This assumption has its roots in the "Child Art" metaphor of the art teacher as a gardener, providing extra manure; and also has support from Fiske (qv) and his advocacy of the "cue-rich environment" as a requirement for creativity.

To test this hypothesis, different stimuli were offered to each group on each drawing theme. The initial aim was to develop stimulus material for each theme that was qualitatively different for the Test and Control groups, and so would be more likely to increase the imaginative responses of the Test (high stimulus) group.

As a further test of this hypothesis, the final three items were given with a single stimulus to the Control group, Item 8 music only, Item 9 words only, and Item 10 pictures only.

The Test group had multi-stimulus for these three items, simultaneous music, pictures and words. The mean scores for these items separately were:-

	Test Group		Control Group		t	SS
	mean	SD	mean	SD		
Item 8 BJ Song	7.07	2.3	7.94	2.1	(1.97)	.05
Item 9 Haunted House	6.96	2.4	6.50	2.2	.97	.34
Item 10 Aztecs	6.54	2.4	6.30	2.0	.54	.59
Totaled scores (Last 3 Items)	6.86	1.8	6.91	1.7	(.17)	.87

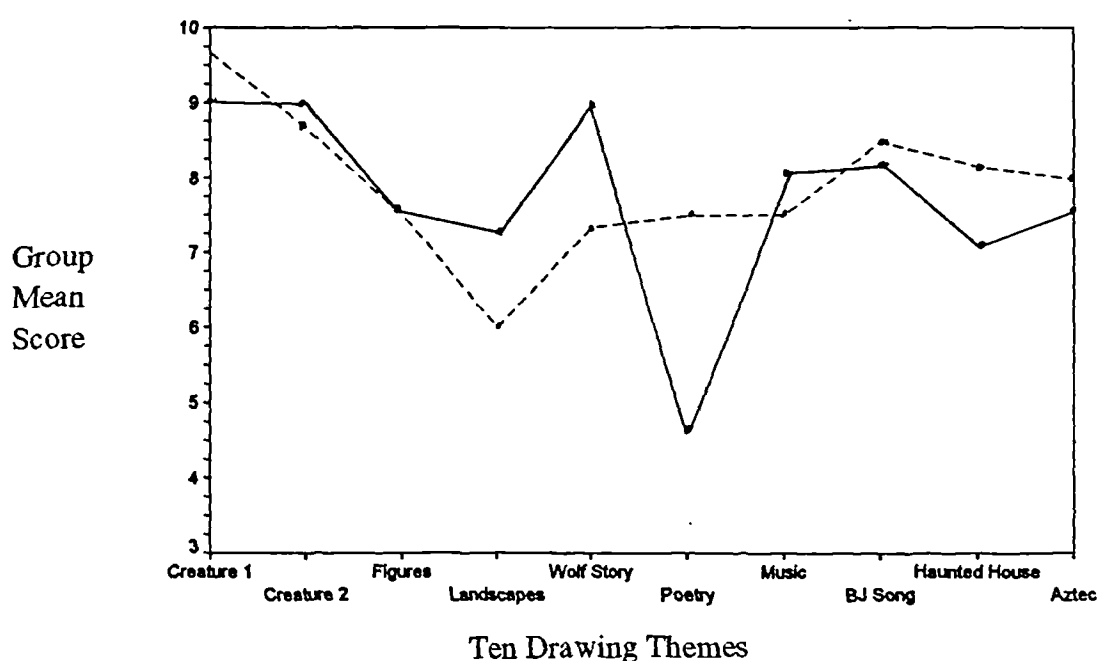
Even though the Test group had higher scores on two of these items, the only SS score was in favour of the Control group: and as the mean totalled score of the Control group were actually higher than those of the Test group who received the stronger stimulus, these results would not appear to support the idea that additional or qualitatively better stimulus will necessarily increase the imaginative response of students to a theme.

To further test this hypothesis it was decided to compare a series of sub-groups selected from the whole sample. These sub-groups consisted of pupils selected on the basis of their scores on the initial questionnaire, deemed to be a measure of their potential creative ability. They were:-

1. The six highest scorers in the Test group
2. The six highest scorers in the Control group
3. The six lowest scorers in the Test group
4. The six lowest scorers in the Control group.

Though accepting that these sample numbers were very low, so one exceptional score could exert undue influence on the overall results, it was hoped that these comparisons would provide some indication of the direction of any influence. The difference in the effect of stimulus is shown by comparisons between the sub-groups, at the top end of ability in Graph 2, and at the bottom end in Graph 3.

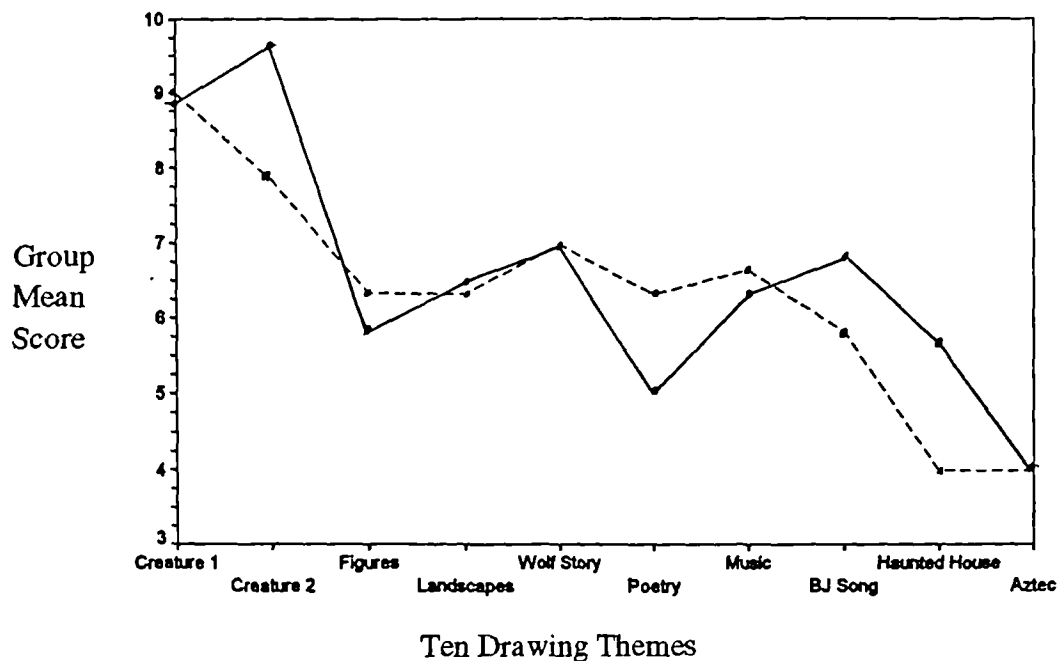
**GRAPH 2. HIGH POTENTIAL GROUP MEANS on TEN DRAWING THEMES**  
High Potential TEST v High Potential CONTROL High Test—— High Control- - - -



If the stimulus was to have some positive effect, the Test group scores should be higher than those of the Controls. These results do not support this general hypothesis. The Test

group outscored the Controls on only four of the ten items, with only two at the  $p < .05$  level; one (item 5) in favour of the Test group, and the other (6) in favour of the Controls.

**GRAPH 3. LOW POTENTIAL GROUP MEANS on TEN DRAWING THEMES**  
Low Potential TEST v Low Potential CONTROLS Low Test----- Low Controls- - - -

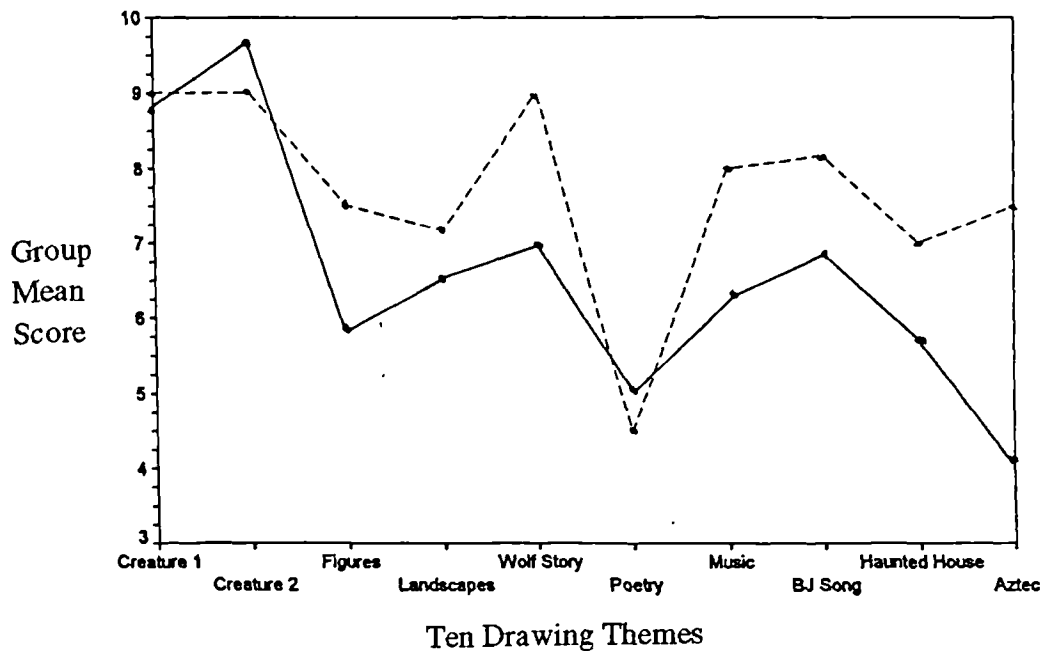


These results showed a similar pattern, with the overall scores well below those of the High Potential groups, but with very little difference between the group means on any particular items, and only one item, "Creature 2" SS at the level of  $p < .01$ .

The fourth hypothesis H4, was that "the most important element in the production of imaginative and original artwork is the innate/initial creative ability of the individual pupil, (as exemplified by scores on OIP and Creative Personality Tests)".

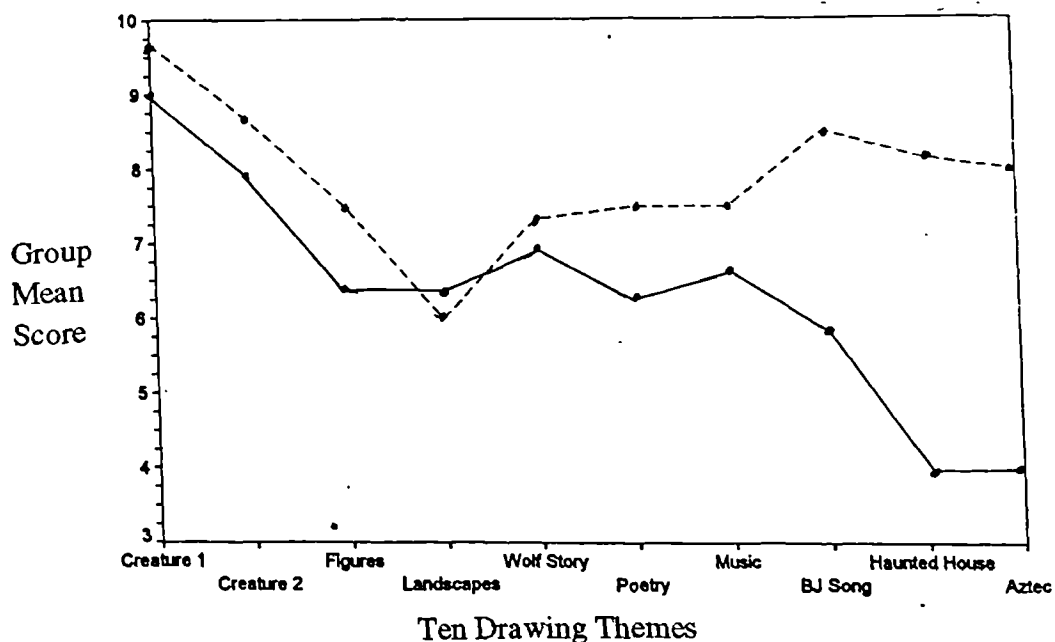
The profile of scores between the High and Low Potentials of the Test group, and the High and Low Potentials of the Controls are shown in Graphs 5 and 6. If both groups are given the same stimulus than any difference in response might come from some other source, possibly their "innate/initial" creative ability.

**GRAPH 4. TEST GROUP MEAN SCORES on TEN DRAWING THEMES**  
 High Potential TEST v Low Potential TEST    High Test - - - - Low Test - - - -



The profiles of these results follow a very similar pattern, with the High group producing the expected higher scores on eight out of ten items. However, t-tests on the comparative means of these groups showed only two SS items, Wolf Story at  $p < .03$ , and Aztec at  $p < .02$

**GRAPH 5. CONTROL GROUP MEAN SCORES on TEN DRAWING THEMES**  
 High Potential CONTROL v Low Potential CONTROL    High Con - - - - Low Con - - - -



The profile of the Control groups again showed a remarkably similar pattern, with the High group as expected, producing better scores on nine of the ten items, but with only two SS at  $p < .01$ .

**TABLE 30: STATISTICAL SIGNIFICANCE LEVELS OF SUB-GROUP MEANS**

	Graph 1 All T/All C	Graph 2 HT/HC	Graph 3 LT/LC	Graph 4 HT/LT	Graph 5 HC/LC
Drawings					
1. Creature 1	.51	.45	.83	.86	.30
2. Creature 2	.00*	.73	.01*	.30	.39
3. Figures	.12	1.00	.21	.11	.17
4. Landscapes	.08	.08	.83	.28	.67
5. Wolf Story	.04*	.05*	1.00	.03*	.63
6. Poetry	.37	.03*	.30	.75	.17
7. Music	.43	.60	.79	.12	.48
8. Billy Joe	.05*	.79	.49	.26	.09
9. Haunted Hse	.41	.35	.32	.41	.01*
10. Aztecs	.59	.42	.74	.08	.01*
Overall Items	.56	.71	.72	.14	.01*
Last 3 Items	.87	.40	.55	.11	.01*
No. of SS Items	3	2	1	1	2

## 5.4 SUMMARY

There were several general points arising from the results of this intervention.

1. There was a general decline in marks from Item 1 through to Item 10, indicating the possibility of "exam fatigue" in the scores of the later items.
2. There were no gender differences in any mean scores on any theme or between any of the scores within any of the sub-groups.
3. Comparison of the group means on each item showed that many students had a preference for certain themes, that is, the scores of most students were high on that item, eg. Items 1, 2, 5, 7, 8, with means of 7+ , but low on other items, particularly Poetry (mean 6).

This point was also illustrated by the fact that often some high ability students failed to score on particular themes, and these low scoring themes varied; though the Poetry theme

produced consistently low marks in all groups. This was a surprising result as all these pupils have some experience of responding to poetry in their English lessons, and also this item produced many exciting works during the pilot testing, which was why it was selected for the experiment.

The spread of scores within some individual items was very mixed. Five items had standard deviations in excess of 2.1 against means of less than 7. With regard to the specific hypotheses:-

**H1        "There will be a statistically significant difference between the scores of the Test and Control groups".**

The results produced no evidence that providing stimulus over and above the setting of an open-ended theme or topic, increased the originality or imaginative qualities of the response. On the two tests which best illustrate this point, Creatures 1 and 2, the scores of both Test and Control groups actually went down after they had received extra stimulus.

**H2        "The choice of a particular "Theme" is a major influence on the quality of imaginative artwork."**

The difference in the mean scores on different items indicates that the choice of theme is important: that is, some themes are perhaps more interesting than others to teenagers.

**H3        "The quality of the source material is a major influence on the imaginative quality of the response."**

This was not supported with any great conviction by the results of this investigation, with only two items SS at  $p < .05$  level, and one item SS in the other direction. Also, on the items designed to test this particular hypothesis (no. 8,9,10), none scored significantly in favour of the multi-stimulus Test group; and one was actually against, at the .05 level.

**H4        "The most significant factor in the production of imaginative artwork is the innate/initial creative ability of the individual pupil, (as measured by the OIP Test and their Creative Personality)".**

The results of this intervention appear to support this thesis. The twelve potentially most creative students (from OIP and questionnaire) produced actual work with a mean score

of 7.8 whereas the twelve potentially least creatives produced work with a mean of 6.4 , with only one pupil reaching the high mean.

Generally, the results match the ability of the students rather than the quality of the stimulus. However, there were occasional examples of work produced at the highest level by individuals who previously had shown no obvious talent. So clearly the pre-test grading did not pick up everyone with creative potential.

Overall, it was an interesting experiment to conduct, but there were several problems within the system which could be addressed:-

1. The pre-test evaluation and ranking of the subjects
2. The practical administration of the tests
3. The choice of "Themes"
4. The selection/differentiation of stimulus material content
5. The refining of the criterion-referenced marking system.

Though an imperfect instrument, this intervention could be, with revisions, a useful indicator of imaginative graphic ability, and thereby an indicator of potential creative ability. But it does raise one major point. Much of twentieth century teaching, and certainly this project, is based on the idea that the purpose of education, as expressed neatly by Fiske, was "providing a cue-rich environment for the stimulation of learning". This experiment has provided some evidence for the counter-claim that if the "cues" are too rich, then they can restrict the involvement of imagination by actually providing too many answers, and not allowing the student to engage in creative problem-solving, what Bruner (1957) called "extending the information given".

It would appear that it is possible to overface the pupils with new ideas, so that there is no room left for their own imaginative contribution, or alternatively, perhaps the sheer quality of the stimulus overawes the pupils and so inhibits any response.

## **CHAPTER 6**

### **6.0 CONCLUSION**

#### **6.1 Art and Art Education in a contemporary social context**

The general aims of this study were to examine the nature of creative thinking, its role in the context of art and art education and to identify ways of enhancing creativity in art students through the application of specific teaching strategies. The creative thinking of the artists was deemed to be in the context of their production of original, graphic images.

From the review of current literature on creativity, the consensus view was that the construct of creativity is a "whole person" attribute, and is made up of four discrete but inter-related aspects:-

personality,  
cognitive abilities,  
cognitive style,  
motivation,  
all influenced by the external environment.

This investigation included a series of tests, measures, and self-report questionnaires, designed to illustrate and evaluate the above points, and to compare by statistical analysis, the responses of art students and non-artist controls. In general, these results support the hypothesis that art students have higher levels than non-art students of those attributes which many psychologists believe are the basis of creative thinking.

If these attributes are to be effectively utilised, then teaching strategies must be implemented which allow for their expression. These interventions must be framed in the context of art education as a creative experience, which means adopting the pluralist context of contemporary art.

For art education to have any real significance it must solve its basic internal problems.

- 1 Whether its function is education "for" art, i.e. the training of artists, or education "through" art, i.e. the imparting of some "aesthetic" experience to all students.
- 2 Whether it is fundamentally "skill" based, or "idea" based; whether it is primarily concerned with output or input, or some combination of the two.



3 Whether the starting point for art education is the student's needs, interests, unique development; or Art itself, its values, structures, unique features. Art education must also relate to some firm "art" foundation. Art is "X", so art education strives towards learning about "X". This is a neat assumption and such a system would work well if the tenets of art were fixed, but in the present pluralistic, post-modern climate, where are the foundations of art?

If art education is to truly reflect the multitude of opinions, attitudes, and issues of contemporary society; it should represent this diversity in the studio/classroom by a liberal, critical, investigative approach to the variety of methods and ideas. This approach has the support of Eisner and Holt, and was summarised by Gardner (1989):-

"... students need to be introduced to the ways of thinking exhibited by individuals involved in the arts; by practicing artists and by those who analyse, criticise and investigate the cultural contexts of art objects."

The temptation for art teachers in these uncertain times is to return to the canons of the (recent) past, which worked then and so should work now. However, it is this author's belief that an opportunity exists for the establishment of a new order, for by accepting "change" as the norm, and building creative thinking as the basis of art education, we have a potential formula for the future of the subject which is in tune with our contemporary philosophical and social context. If we reject this opportunity, we run the risk of being "overtaken" by our own students, in the way that I.T. in schools and colleges is now dominated by students who not only "know" more than their teachers, but are more open and experimental. Art is an echo of contemporary themes, and normally it upholds earlier accepted values, of religion, science, etcetera, but now the timescale of opinion and attitude has accelerated so much that the students become aware of these changes at the same time as the artists, and possibly before the teachers.

Even within such an apparently fluctuating foundation, important fundamentals do not change; implicit in the concept of art are:-

- 1 Art is the external visual expression (symbol) of some idea.
- 2 This symbol is a link between people, and acts as the medium of communication.
- 3 The nature of the symbols is determined by society, or by its most

- influential members (Pharaoh, Pope, art critic).
- 4 Changes to the form of these symbols come about largely through external influences (social, philosophical).
- 5 Individual artists are allowed some freedom within the existing framework to personalise the symbols.

Throughout history art has had a firm socio-cultural foundation, and has always been a reflection of its time and culture. However, from the early 19th century a split appeared in the world of art. The "Classical" autonomy of the academies was challenged by the "Romantic" artists who assumed the role of the "avant-garde", rejecting tradition, and claiming that decisions about the form and nature of art were not the prescriptive "canons" of the past, but were the prerogative of the individual artist.

From this time the individual has had the right to self-expression; and originality, emotion and intuition became key words. This approach conflicted dramatically with the contemporary academic attitude, in which the role and symbolism of art were clearly laid down, and so artists became either Classical or Romantic. Gablik (1984 p37):

"The original meaning of the term avant-garde implied a double process, of aesthetic innovation and social revolt. It took the form of an estranged elite of artists and intellectuals who chose to live on the fringe of society. (They saw themselves) as the conscience of bourgeois civilisation."

The academicians claimed that the avant-garde were a temporary aberration, while the avant-garde claimed that they were just misunderstood and that society would eventually catch up. The avant-garde were right, right that is until the recent post-war era, when the consequences of 150 years of continuous innovation and the often naive adoption of new ideas from philosophy, psychology and science became clear. As with Newtonian science, the judgement of quality and truth in art had rested on formal principles of structure and symmetry; today artists frequently ignore such concerns, and in many cases deliberately break accepted rules of composition and taste. Parks (1989):-

"In this period of societal flux, art has become pluralistic and diverse, acknowledging the ambiguousness of the present and the future, while reinterpreting contemporary life by reflecting on the look of 'old' art ... relying on allegory, metaphor, and the juxtaposition of unrelated images."

The post-war fusion of quantum mechanics and existentialist philosophy has founded a "Post-Modern" culture, which having rejected its past and denied any future, seems today content to let the tail wag the dog, and follow the whims of fashion. Linker (1985):-

"Post-Modernism emphasises the regulating power of social forces, it can be said to describe the de-centering of the self, evolving from the development of techno-scientific culture."

Avant-garde developments during the 1960s, were mostly "Hard-edge Geometric Abstractions", and were characterised by puritanical restrictions in subject matter and form. These works had generated their own aesthetics, and it was with an air of almost self-conscious defiance that many artists in the following decade, who saw these works as 20th century "Classicism", reverted to more "representational" art forms. They saw avant-garde as having become a self-perpetuating artistic cliché. Robins (1984):-

"From being anti-establishment, modernism had become the establishment, and a good target for artists and critics to attack."

Livingstone (1989):

"Post-Modern artists sought to counter Modernism's linear progression and quest for new forms with an eclectic and synthetic approach to the entire history of styles."

"... they have chosen to embrace as many different styles and methods of working as possible. (the Dadaist ethic). ... some seemed intent of destroying all conventions by a sheer act of will."

One dramatic side-effect of the post-modern response to techno-culture is that artists now have the power to change the system and values of the 'art-world' from within.

The range of visual media now available, paint, print, electronic, and the speed and volume of communication, now instantaneous and global, mean that the artist now has a potential mass audience, not just an informed elite. This allows the artist to reverse the system, and impose his ideas through a mass culture to overwhelm the influence of the minority guardians of taste.

These guardians of our taste at the present time seem incapable of giving any positive lead to society on the nature of post-modern values, or the value of post-modern nature.

Their writings range from the smugly patronising, i.e. Januszcak (Sunday Times 13th Feb 1994):-

"This is one of those moments in art history when a critic would have to be a plank of wood ... not to sense that something art-historically significant is occurring around them ... It is happening at the moment. Conceptual art is going all emotional on us. The language of Duchamp is beginning to describe the feelings of Picasso."

to the simply gibberish, i.e. Rosenthal (BBC TV "Omnibus" 22.2.94) when describing

"The Flower Stall" in a Royal Academy exhibition:-

"It's about somehow a kind of memento mori of, of you know, the world of the consumer. The kind of thing he's done very very successfully within his extraordinary pieces that remind one of being in those shops in, I don't know, in south London or wherever. You know, where the vegetable markets are. And the kind of giving, drawing attention to their formal qualities. And you know we might forget that everything has formal quality too, as well as it were inherent subject quality, and by looking at it in an art context it becomes different ..."

Without any positive critical lead, or any dominant art mode, we are left in a vacuum where fashion or style rule. This does not mean that the established values of art, though challenged, are obsolete. Abstraction and representation, terms which seemed to define irreconcilable positions at the start of the 1960s, no longer seem to hold much meaning in the work of many artists. That is, they are no longer in conflict. Contemporary art is totally eclectic, even indeterminate, a fairly accurate reflection of modern society.

The new scientific theories embracing 'chance' and 'chaos' as the norm in life, have endorsed the cultural acceptance of a philosophy which questions both our perceptions of reality, and our awareness of our own consciousness.

## **6.2 The Brain as a Creative Instrument**

Much of current cognitive psychological research which is concerned with our modes of perception and our concepts of "reality"; has roots in the work of the German philosopher Edmund Husserl (1859-1938), which was first published in 1901.

His basic idea, which developed into the theory of "Phenomenology" was that, regardless of whether the objects of our consciousness have a separate existence from us, they do exist as objects of our consciousness, and as such may be analysed without any assumptions about their independent existence.

Further, it was not just that he had empirical evidence that there were objects out there in the world, he produced the indubitable evidence in his own mind. No-one can experience anything in the external world except through their own directed mental processes.

Martin Heidegger (1889-1976), a follower of Husserl, took these ideas still further, summarised by Magee (1987 p258):-

"... we humans are not subjects, spectators, observers, separated by an invisible plate-glass window from the world of objects in which we find ourselves, and trying to relate to it. On the contrary, we are part and parcel of it all, and from the very beginning we are amongst it all, being in it, coping with it.

In consequence we are not in any primary sense 'observing subjects', or 'knowing beings' in the way traditional philosophers have regarded us.

We are beings in amongst and inseparable from a world of being, existences in an existing world, and it is from there that we start."

and Dreyfus (1987):-

"Philosophers since Descartes had been trying to prove the existence of the external world. Kant said it was a scandal that no one had successfully done it. HEIDEGGER in "Being and Time" (1927) retorts" the scandal is that philosophers keep trying to prove the existence of the external world, as if we were stuck in some "internal" world and couldn't get out."

The idea of "Reality" as a fixed, concrete, measurable external world, came with the first Newtonian scientific revolution; the 20th century scientific revolution has produced a wholly new vision of physical and biological reality, involving theories of Chaos and Complexity. Nature, or reality, is now seen as indeterminate, unpredictable, uncertain, ever-changing; and the human brain is now seen as a wholly creative instrument, adaptive, flexible, and generative. Yet we still have an educational system which not only totally ignores these elements, but is apparently becoming even more reactionary.

The fusion of thought and theory between the cultures of science, philosophy, and

psychology, giving us the possibility of a unified 21st century paradigm, has been neatly summarised by Zohar, almost in the language of Husserl and Heidegger:-

"(In the new science) ... the subject/object split is replaced by "observer participancy" - the quantum observer stands 'inside' what he observes; his own goals, and consciousness help to 'make' the reality he observes.

This replaces the old objectivity with a new kind of "truth within a situation" or engaged truth. The distinction between fact and value becomes less clear."

"Hierarchy, absolute certainty and the single point of view are out. A new kind of democracy of perspective, the positive value of ambiguity, of rapid and unpredictable change, and pluralism are in." (Sunday Times 6.2.94 p14)

She then advocates an acceptance of human behaviour in the terms of the new science, using the quantum metaphor, that man can exist both as an individual, and as a social unit at the same time.

"Liberal individualism ... portrays people as discrete units... free to pursue their own interests ... but at a high cost in loneliness and isolation.

The opposite, more collective model ... people sometimes need to experience themselves as part of a larger (social) process. In this model, people are thought to become what they are through their outer, social experiences."

Zohar advocated an acceptance of this essential duality as a basic concept of human identity, claiming that it is a vital condition if our pluralistic society is to regain meaningful social cohesion, a consensus that thrives on difference. She believes that only through creative dialogue can we evolve "lifestyles and social institutions which give expression to both facets of human nature", the individual and the social group. This idea has great significance of education, particularly art education, and has the support of a different group of scientists, at the Neurosciences Institute in San Diego, USA, lead by Gerald Edelman; who have come into this problem from a different direction, from Biology.

Edelman (1992) stresses the extraordinary spontaneity of the brain's activity, that the brain is a generator of new behaviour, it reacts to the world in a totally unique way, motivated by its own system of values, the essence of individual freedom of action. This represents a radical, biological, evolutionary theory of mind. He advocates a re-

orientation in the way we think about the brain, moving away from the "computing-machine model" towards a biological paradigm based upon the fundamental concept of the life sciences, natural selection. This theory, which is an extension of Darwin, Edelman believes will bridge the gulf between the "brain function" theories of cognitive science, and the neuro-biologists' discoveries about the actual workings of individual brain cells and structures. Thelen (1994):-

"Here is a brain theory that fits the behavioural observations that we have been collecting for all these years."

Most scientists believe that the brain is essentially a biological computer, and then study it by building electronic simulations. Edelman turned this round by asking if one could really explain the content of a TV programme by asking a transistor. This has the support of Roland Penrose, "Computers can only simulate the computable aspects of mind"; but the direct opposition of Francis Crick, who believes that measuring the oscillations of neurons is the key to conscious thought. If Edelman's approach was applied to the world or art, would an explanation of the human brain clarify the meaning of a painting? Perhaps not, but it might help. Rembrandt and Shakespeare may not have had any knowledge of the mechanics of mind, but they had a deep intuitive understanding of human nature (and also the ability to express it).

The Edelman theory relates the brain directly to "human nature"; and as all art exists in its own context, any art relevant to our present situation must reflect the present state of our knowledge and culture.

The practical experiments carried out at the Institute support the view that the fundamental learning process of the brain is QUALITATIVELY based, that the brain stores information on the basis of its VALUE. The function is both logical and emotional. The fundamental problem of mind which has challenged scientists for hundreds of years, has been how the brain acquires its knowledge of the external world. The contents of the mind, "thoughts", exist as patterns of connections between brain cells,

and knowledge is deemed to be the relationship between these patterns and the structure of the external world.

Edelman supports the earlier theories of Husserl and Heidegger, that our brains are not passive receptors of external information but actively construct it. He then develops this further by claiming that the knowledge retained is selected by value judgements based on individual perceptions. So as art and creativity are essentially qualitative concepts, the Edelman theory offers positive support for the educational value of both. The three basic principles of Edelman's theory of brain functions are:

- 1 Diversity: the spontaneous intrinsic generation of variant forms.
- 2 Interaction: these variant forms must be given the chance to interact with the environment through the senses.
- 3 Amplification: the strengthening of variants that work/fit.

The first two are of particular interest to educators in the creative arts.

"Interaction" in the context of art education is the provision of a variety of stimuli, which is the basis of most art teaching. However, the principle of "Diversity" reinforces the fundamental concept of the brain as a creative instrument; and the generation of a multitude of new forms is established as one of its primary functions. The expression of these forms as visual images places art education as a major element in cognitive development.

### **6.3 Cognitive Issues in the Creative Arts**

The concept of a "creative process" was first formulated by Brewster Ghiselin (1952), from a collection of statements from outstandingly creative scientists and artists, as to how they thought they produced their ideas. Other workers followed this lead and related creativity downwards from the very highest level, until Herbert Simon moved creativity out of the genius domain of unconscious insight, and placed it firmly within the grasp of normal people:- "... creativity depends ... on ordinary cognitive processes that are applied in powerful ways."

Later researchers have modified this simplistic idea and claim that the creative process



only exists within a larger system of social networks and problem solving domains,

Martindale (1990):-

"(The creative process) ... involves a type of cognition that seems only to occur within a matrix of associated motivational, attitudinal, and personallogical traits."

This idea seems really to cloud rather than clarify the issue. Is it possible for any cognitive process to take place OUTSIDE a matrix of motivation and personality?

Martindale et al presumably mean that particular "personality" traits influence creative cognition. Yet neither they nor any other researchers have been able to provide any evidence of the direction of this influence. Lots of correlations, not much causation.

Work on this investigation has convinced the present author that creativity is primarily a COGNITIVE thing, ideas are largely abstract and internal, our thoughts exist in some inner world, which in the creative process is protected from external influence. The full pressure of the outside world is not applied until the ideas are externalised through other skills as words, pictures, or music. So to understand "creative thinking" in order to teach it, we must first understand contemporary theories of mind.

Unless creative thought (as the associationalists believe), is only a random firing of chance relationships due to creative individuals turning over problems and ideas in their minds, then there must be some "super-cognitive" creative process.

This author would speculate that this creative cognition could be explained by the Edelman theory that the "learning process of the brain is qualitatively based", that its elementary function is the assessment of "value". Perhaps creative cognition is the ability to SEE/SELECT the most fruitful information and relationships. Perhaps the key element in creativity is the ability to recognise and evaluate. Perhaps what we label as intuitive judgement is merely some form of metacognitive short-circuiting of more formal processes. This is almost a reiteration of the Janet Davidson (1986) theory that the keys to "insight" are the intuitive selection, comparison and evaluation of information.

As highly creative people are able to control this system, and can regularly produce

original, effective solutions within their own domain, it would seem that there exists some specific cognitive processes which should be identifiable.

Is this process a 'fixed', innate or learned ability, or is it a process evolved by the individual, and developed to cope with specific or changing situations? The simple question would appear to be whether there is a single, universal cognitive process for the production of creative ideas, or does each individual have its own 'evolved' system?

These two viewpoints are represented by the theories of Ghiselin and Edelman *qv*, and it would seem to be that this is more a philosophical question rather than a simple scientific dispute, and these ideas can be looked at as alternative viewpoints of the nature of 'reality'.

Which of the three theories of 'reality' as described by Penrose, do we accept; the fixed classical reality of Newton, the cosmic reality of Einstein, or the micro-cosmic reality of quantum mechanics, all of which accurately describe some aspect of our world and yet are contradictory?

If we accept the Ghiselin et al theory of a universal "creative process" this represents an acceptance of universal values, an acceptance of classical constructs of judgemental criteria; some form of 'a priori' aesthetics. At its most elemental level, creativity comes about largely through the manipulation of symbolic abstractions, intellectual in the domain of science, largely emotional in the arts; and both sharing the common ground of "aesthetics", that is some form of symbolic structure which satisfies some universal concepts of truth or beauty.

Assessment of the quality of these solutions, i.e. their creativity, demands some formal criteria, and these universal norms of quality are actually social norms, the consensus judgements of an elite. On a more realistic, practical scale, these "norms of quality" do apply throughout the arts. In the domain of music, where composer and performer handle abstract constructions of sound, inducing emotional responses from their audience. Also in literature, the author communicates ideas as propositions which evoke responses from

the reader. In the visual arts, painters construct visual or tactile images which are symbolic and reflect their attitudes and feelings. Even the great god "science" is founded on abstract constructs in the form of numbers etc., and builds them into new solutions, or images of reality.

Another consequence of accepting creative thinking as a "universal" process is the abandonment of the idea that creativity is "domain specific". Skill is domain specific, knowledge is domain specific, and obviously some thinking skills are domain specific (verbal/visual), but creative thinking?

Psychology is slowly moving out of the realm of Newtonian `fixed` patterns of behaviour, and yet it is this position which best represents the `human` view of the world, a sensory world of tangible objects and relationships.

However, science has moved on, and now gives us a more detailed look at ourselves and our world. At the level of our current knowledge, the Edelman view seems to offer an appropriate explanation of creative thinking. In an ever-changing, `creative` universe, a wholly creative mind would seem to be an essential human characteristic.

Unfortunately, a fundamental component of creativity is `value`, and as ever-changing worlds produce new and different values, the next question is likely to be "what values are relevant in a quantum mechanical, post modern world"?

In the way the modern movement de-stabilised 19th Century values, the Post-modern movement is currently pressurising contemporary values, and so challenging new opinions and attitudes await the future teacher of art.

## **6.4 Creativity in Art Students**

### **6.41 Cognitive Style**

This study looked at five aspects of cognitive ability in art students, in order to examine whether creative individuals have some common form of "Cognitive Style", a term first

used by Allport (1937) to describe "The typical or habitual mode of problem-solving thinking, perceiving and remembering". This style is generally accepted as being a relatively stable system, but which can be influenced by external events.

Later writers have developed their own theories of the process, Curry (1983) described it as an "Onion" with layers of measures, from Instructional Preference, through Processing Style to Personality Style.

Riding (1991) saw the process in terms of "families" of styles, with two main independent dimensions, describing as Wholist/Analytic the two approaches to problem-solving, and Verbalizer/Imager as the preferred sensory mode.

Sternberg (1988) listed his "components" as:- questioning norms, always asking why?, being aware of gaps in knowledge, using own knowledge as a base, being alert to novelty, using non-verbal communication.

This study looked at five general aspects of cognitive function:

- AvOGrade as a measure of academic ability

- Spatial ability

- Original Image Production (OIP)

- Divergent Thinking

- Plus the Sternberg components from the Student Personality Questionnaire.

These aspects have particular importance for the teaching of creative thinking, particularly in the area of "divergence". Teaching styles often found in science and maths lessons are usually logical and formally structured to encourage convergent thinking directed towards the "right" answer; whereas teaching in the arts subjects is often aimed at generating a more open response. These effects have been investigated by many workers including Domino (1971), Cronbach (1984) and Liam Hudson (1966), who also studied the effects of matching teaching and thinking (learning) style, concluding that convergers prefer formal, logical questions, and divergers prefer open-ended situations, and that problems arise for all concerned when there is a mismatch. Another important conclusion was that teachers preferred their pupils to be of the convergent type, i.e.

conformist and orderly. Riding and Cheema (1991) described divergence as being "considered as irritating, disruptive, and even threatening by teachers". This poses particular problems for potential art students who already have personality characteristics of independence, open-mindedness, absorption and determination.

#### **6.42 Original Image Production**

Reports of visualisation and mental imagery have been recorded by scientists since Fechner in 1860, and are still frequent today, World Champion Javelin thrower Steve Backley is reported to throw one thousand javelins per day, "in his mind" Swiss Olympic Skier Daniel Mahrer visualises every turn on the course "hundreds of times" as mental preparation for his event; and actor Anthony Hopkins can remember every day of every month of every year since he was eleven, "My past is stamped indelibly on my brain in pictorial form".

One of the theories which stimulated this study was the work of Lynn Waterhouse (1988), who claimed that "„special talents... are based on a set of skills that involve the accurate and extensive representation of visual images.....and depend on the ability to store, generate, and manipulate accurate, complex, and novel visual images.....and perform large-scale pattern generation and recognition on these internal representations."

Though no-one seriously doubts the phenomenon of "visual imagery", the nature of these images is greatly disputed by psychologists. It is difficult to look at any work in the arts without concluding that the producer possesses exceptional visual imagination. The ability to generate and manipulate visual images is the essence of creative thinking within the domain of the visual arts. The identification of this faculty, and its development through training, is one of the fundamental aims of art education. In this study, the production of original images was the primary measure of creativity, and the test devised was intended not to be a measure of drawing skills, but of originality and imagination. The results showed a clear difference between the scores of art students (mean 64) and those of the controls (mean 52). In so far as this test was a measure of the number of

creative elements contained in each work, it could be said that the art students were more creative; 60% of art students scored higher than 70%, whereas 60% of the controls scored less than 50%.

#### **6.43 Personality**

A major aspect of this study was to analyse the specific characteristics of the creative personality likely to be found in art students; whether these art students differ in any of these respects from their non-artist peers; and ultimately, whether the possession of these characteristics is a predictor of creative ability.

'Personality' was defined as "the character patterns of thought, emotion, and behaviour that best illustrate 'personal style' and influence interaction with the environment.

Early attempts at the identification of the creative individual came from study of the characters of acknowledged creative people, most of whom unfortunately for this study, were scientists. In general the conclusions were that in comparison with the overall population, 'creatives' were found to be more intelligent, more sceptical, more self-sufficient, more unconventional, more imaginative, and more emotionally sensitive.

In addition to these biographical studies of eminent people, personality correlates have been assessed empirically by the answers to personality questionnaires and tests, and the findings of both methods are similar. ALL creative people are:-

- open to new experiences
- independent/have self belief

and have

- cognitive flexibility
- above average intelligence
- good imagination.

Bolted onto this skeletal framework are a great diversity of

- individual personality characteristics
- environmental/motivational influences
- domain specific motor skills
- verbal/numeric/visual cognitive skills,

all of which to varying degrees, influence each individual.

Looking at the problem from both ends, though there is apparently a general creative personality TYPE, that is specific traits that are always associated with creative people, there is no specific individual creative personality PROFILE i.e. a group of traits which always produces creative results.

Listing the traits of 'The Creative Person', it is clear that many of these characteristics exist in ordinary people to some degree. So all we can realistically say is that a creative person has 'more' of some positive contributors and less of some inhibiting factors.

The actual results of this study show some support for this hypothesis with regard to art students. On the self report of 32 personality items, the raw scores of the art students were higher than those of the non-art controls on 25 of the 32 items, with 8 of these at a level of statistical significance  $p < .05$ . Also, the largest differentials between the group scores were on the items of Play, Originality, Commitment, and Self-criticism; which are all key elements in the descriptions of creative individuals. The art students who were the subjects of this study scored highly on elements which showed them as likely to be people who are open-minded, curious, tolerant, intuitive, ethical and honest, who seek interesting situations and like to play with ideas. They have a driving absorption in their subject and their work, they are self-disciplined, determined, with high intrinsic motivation and a drive for accomplishment and recognition. They are independent, unconventional, value originality and freedom, show a willingness to take intellectual risks, prefer to set their own rules, and often reject other people's limits. Though empathetic and emotional, they are a paradox of social behaviour, often reflective, withdrawn or introspective; sometimes isolated, sometimes integrated; often showing conflict between self-criticism and self-confidence.

The key question arising from these ideas is whether possession of these personality characteristics will identify a creative person, that is, could these people produce creative ideas? It would appear that though creative people possess these characteristics,

personality is not enough; they are only components which enhance the cognitive process.

Also, all the personality and motivational aspects which are normally associated with creative people, can also be found in people who are not labelled as creatives. So either these people are latent creatives who are just not required to express that creativity, or the characteristics normally associated with creative people are just that, statistical correlations. Most of the evidence is in the other direction, that no specific personality characteristic is responsible for creative thought.

Also, the acknowledgement of any creative ability is itself a social act. Acceptance of any creative "idea" is inevitably enveloped in a mass of environmental influences.

Whether these external pressures influenced the original idea is immaterial, but they certainly influence the subsequent assessment and evaluation.

However, descriptions of the creative personality tell us nothing of the cognitive processes which deliver the creative product. They illustrate the likely framework for creativity, but not the way in which the idea is developed, and from the evidence available, the personality of the individual seems NOT to influence the actual 'creativity' much at all. Probably the direction, domain, and choice of subject, and certainly the volume of output; but actual personality influences on the cognitive process of creativity are extremely difficult to establish.

Though the human personality structure is relatively stable, the system is subject to pressure from genetic, cultural and environmental influences. These forces take many forms and operate largely in the area of motivation.

They may drive the individual to 'want' to be creative, but that is still a long way from the achievement. *Motivation only creates the climate for creativity, it does not provide the ability to produce.* It may affect the volume of production but not necessarily the quality of the work.

The view that the human mind actively "creates" our image of the external world from



sensory perceptions is now commonly accepted by scientists. This author would speculate further, with the support of Waterhouse (1988) and Davidson (1986), that through the medium of their fertile imaginations, creative artists can generate their own variations and simulations of the external world. This attribute has various psychological labels under the banner of 'avoidance of reality', but which is in the creative artist, actually a positive RESTRUCTURING of reality through imagination; what Einstein called "inner freedom". This enables the artist (painter, writer or musician), to explore, to experience, and to control tension in a totally secure environment; a point reinforced by the reports of the art students interviews (4.63 b,c,d).

## **6.5 Summary**

In addition to a general investigation of the nature of creativity in the visual arts, this study began in response to five problems in secondary art education identified by the author:- the links between art and art education, the links between art and society, the need for a sound philosophical base, the development of cognitive skills, problems of psychoanalysis, and the political threat to art education.

The work has clarified some of the issues. The tenuous link between art and art education will break unless art in schools adopts more of the range of "styles" and media currently accepted as art. Without advocating the preservation and exhibition of animal carcasses in the art room, how long can we retain the 19th century attitude that accurate drawing from observation is the essence of art and good teaching practice?

The link between art and art education which for centuries has been so strong, has now become strained by the divergence of pluralist attitudes in 'adult' art. These are also a *reflection of the range of philosophies and styles which run through all the arts*. The sheer volume and often contradictory nature of these ideas makes the choice of any one philosophy difficult. Nevertheless, we must have some firm foundation for our teaching. We must make decisions about what we teach, and why we teach it, before we worry

about how we teach it; though the reality is that we have not made much progress on this issue since the early 1970's when Witkin et al advocated the formation of "a proper `educational` theory of the arts".

Though we live in the paradigm of the individual, and society elevates the creative individual as never before; education still works on the assumption that people are alike, that they fit neatly into chronological, developmental, or gender groups. Art is one of the few curriculum areas which resists this attitude and usually adopts Carl Roger's proposals, by allowing the differences between pupils, noting how are they different, and considering what distinguishes an individual. Art has a major role to play in the emotional, cognitive, and social development of the individual student, principally by allowing that individuality to evolve and express itself.

"The creative arts have an especial significance in respect of the world within the individual, in respect of his subjectivity." Witkin (1989)

Within the art curriculum, we must retain the ideal of freedom of self-expression and ally it to relevant aspects of cognitive development. If the brain is a creative instrument, and is self-organising, then these activities must be encouraged during the developmental years and given scope alongside existing programmes of academic cramming, rote learning, and convergent problem-solving systems. The enhancement of openness to experience and divergent thinking skills are areas into which art education should move. These skills are already a part of art and are essential for future society. It is not so much a question of adopting new programmes as identifying the qualities as they exist now and promoting them still further.

The arts also have an important role to play in the placement of the individual in society. They demonstrate the human predicament in a variety of social systems and attitudes, and portray the individual in many guises within these systems, allowing the spectator to participate on an imaginative level, often in a deep and meaningful way.

The sixth issue raised was the threat to art education, identified by Ross (1989 p. ix):-

"Arts educators may perhaps be forgiven for adopting somewhat embattled and defensive attitudes during the present blitz conditions. Many art and design teachers now seriously fear for the survival of their traditionally strong subject."

Art education is most definitely under threat and to survive it must adapt. These threats are not only the obvious external political pressures, further described by Ross (p viii) as having produced "a degree of instability bordering on madness"; but more invidious problems like that highlighted by Karen Hambleton (1987), concerning the adoption of testing in art in order for art to maintain its place on the curriculum:-

"Standardised testing is correlated with a standardised curriculum that minimises the kinds of complex thinking skills so needed in our rapidly changing society. Standardised testing has implications for making art education part of a system that many in general education find to be seriously flawed",

There are also more subtle internal pressures, concerning the very nature of visual expression. Though there is still a body of the academic establishment who maintain the historical values (as they see them) of art as a largely skill-based medium with strict codes of expression, the avant-garde of art have moved solidly into a 'post-modern' phase. This brings great problems for art education, not just the practical problems of diversity in style, but major philosophical problems, Kearney (1987):-

"(Post-modern) ... became synonymous with those ... post-structuralist currents of thought which disputed the modern belief in the primacy of the humanist imagination as a creative source of meaning ...

This threat to abolish imagination coincides with growing talk of the "demise of man" as a subject of identity ... and all modes of expression are irreparably contaminated by the erosion of 'original meaning'.

... the human imagination has now become a post-man disseminating images and signs which he himself has not created and over which he has no real control."

He goes further to sample post-modern artists who he believes repeatedly "undermine the modernist belief in the image as an expression of individual consciousness", and cites Jameson (1985):

"The post-modern artist does not claim to express anything because he does not claim to have anything to express ... the typically post-modern image is one which displays its own artificiality, its own pseudo-status, its own representational depthlessness."

Kearney also cites Foucault (1966), Lyotard (1986), and Derrida (1983) in support of the conviction that post-modern culture "jibes at all talk of original creations", and "... the very concept of a creative human imagination is a passing illusion of Western "humanist" culture". He sees the demise of the "art-image" as having been bought about by the rise in mass communications media, which has challenged the division of high / popular culture.

"These (art) movements share a basic impulse to "demystify" the pretensions of high-modernism, with its established notions of controlling author, narrative order and metaphysical profundity. They explode the sacramental status of the humanist imagination and jubilantly claim the "end of art"."

The post-modern ethic is now very influential in colleges, and as these present students become teachers, then art will become further alienated from general school life. Whether or not we accept this post-modernist view of art, we cannot deny the mass techno-culture that pervades our lives. This means that artists have the apparent choice of hiding in the ivory tower of high art, or accepting the challenge of the new media.

If we look to the future of visual expression, it lies very clearly in the electronic image. The visual medium has always changed and adapted, we no longer teach fresco painting, and we have (after 100 years) at last adopted the photographic image; but the rate of change is accelerating and artists can influence and control that change. Artists can and should accept electronics. Science and society are already almost dependent on the electronic image, with its massive social and aesthetic impact; while artists play with infantile paint-boxes. The role of art in the electronic age must be to enhance the quality of the image, its visual and emotional impact. All these attributes can be learned in the art room, initially with pencil and paper if necessary, then adapted and incorporated into other media. It is this author's personal experience in industrial media that whereas the practical, technical skills are easily learned, the creative, imaginative, aesthetic skills are not. Also while secondary art teachers yearn for the good old days, primary school pupils are wearing out their computers.

Art will never "prove" its worth in the present political climate by putting up displays of

traditional colourful work. One need only ask the presently unemployed `wood` and `metalwork` staff, who were the subject of massive new initiatives and recruitment only 15 years ago, how they feel about the role of traditional skills in contemporary education. And if artists feel secure in their skills, look at the amount of appalling DTP artwork now being produced by staff with technical skills but no aesthetic judgement, and approved by management with similar attributes.

Art is now a peripheral activity in society and in schools, yet the values of art, rooted in emotive, expressive, aesthetic, qualitative values, remain vitally important to both pupil and society. To secure the place of art in the curriculum of the near future, the traditional values of art must be combined with the needs of students and yet be in step with current innovations. Artists must decide whether art is a subject or a skill, and if they don't make this decision then others will make it for them. It is the author's belief that the days of art as a fixed subject are numbered, and that without losing its historical and philosophical base, it must draw in new areas to maintain its role as the guardian of visual discrimination, and the value of expressive quality. Society is now moving back into a visually dominated culture, and it is essential that art teaching incorporates both visual experience, production and analysis, and creative thinking, not just so that our pupils can find employment in the future, but so that they can cope with the future; and further so that they can enhance our future with the quality of their images as artists have done for thousands of years.

Art education must not only accept and adapt the new media, but must develop new attitudes which encourage cognitive development through creativity. This study began with the idea that creativity was an essential part of art. The visual arts involve individual expression, unique/original responses to problems, imagination, a blend of cognitive/motor skills, and an emphasis on the priority of qualitative values. So how far are the factors of creativity: -fluency, flexibility, imagination, motivation, and originality, away from the essence of art?

This study set out to examine the position of creativity in art education, but art education only exists within the context of general education, so it might still be appropriate to sound a warning of the consequences of ignoring social and political trends. In his perceptive article "Art education...and mental functioning" Mel Marshak (1973) commenting on education's addiction to manipulation and control, claimed that:-

"... formal education is one of the tools used to inculcate into the minds of the young the kind of consciousness needed to maintain the social order."

"Now that education interests itself in creative processes, I am in fear and trembling for it can do more harm than good. " p80.

By the late 1970's Brinson and others (reported in Ross 1989 p10-12) realised that the whole future of the arts in education might be at risk in the uncompromising atmosphere of economic cutbacks and social problems, the 'new realism', and the need to 'pay our way' and to educate future workers on the economic facts of life. They would be disappointed to know that these attitudes and problems are still with us in the mid 1990's. Ross himself proclaimed the situation:

"The ethos of market-place culture has been forced upon education....

All this in the teeth of virtually unanimous opposition by educationalists of all political persuasions." 1989 p6.

A more optimistic note was sounded by Brook (1989):

"We might usefully remember too, how often the best has been achieved in the face of official apathy, incomprehension and philistinism. That in itself ought to give us heart in the struggle ." p83.

It is this author's contention that the art department should be the antidote to the formal socialising process of general education, simply by virtue of its emphasis on the qualitative values of life; and regardless of the good work done in other subjects, it is the natural home for the nurturing of the individual's potential creative mental growth.

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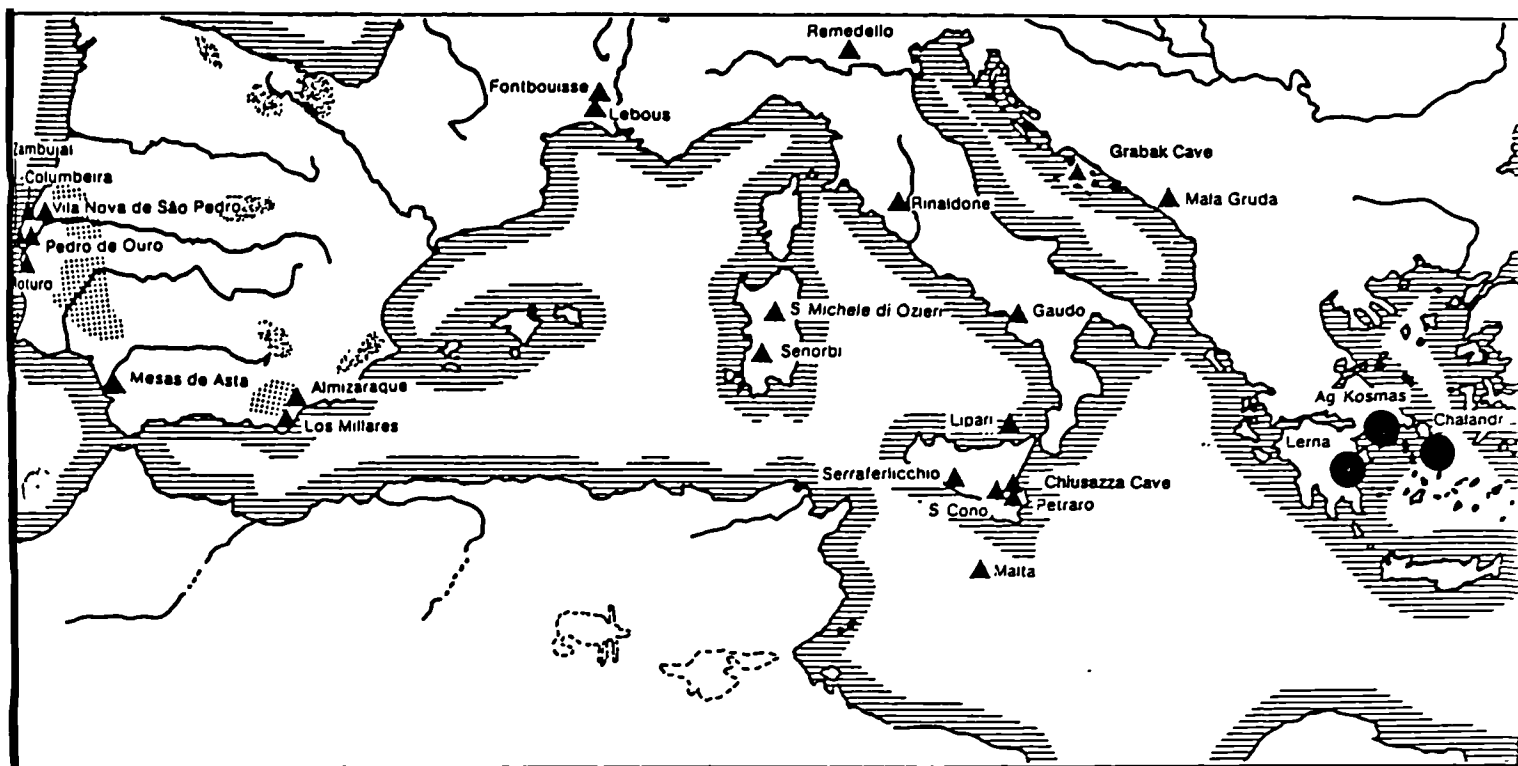
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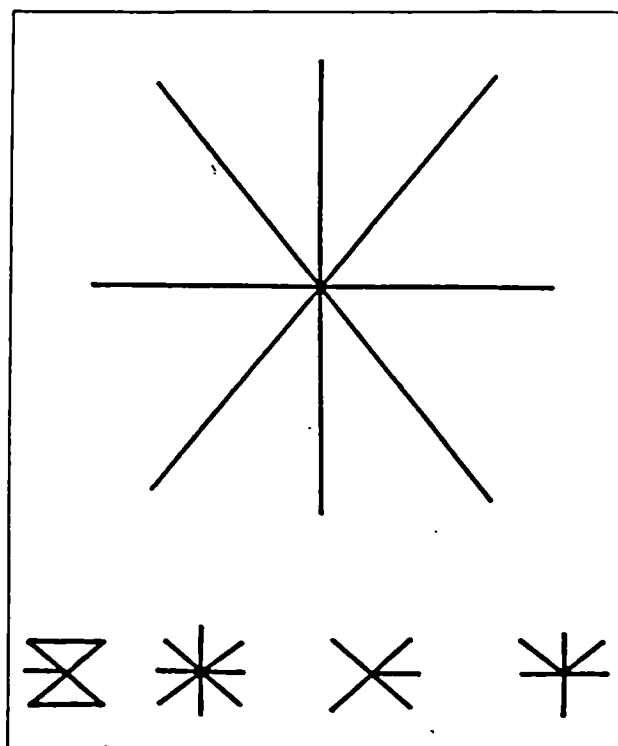
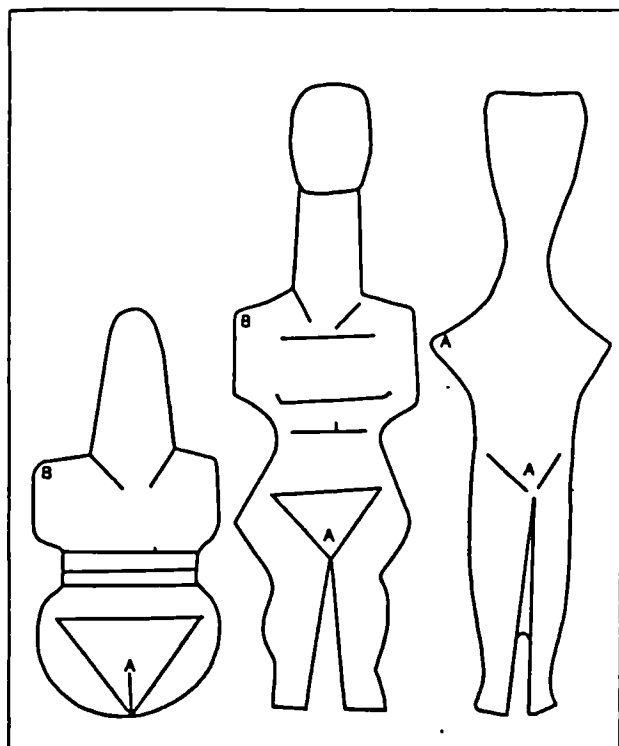
SETTLEMENTS VISITED BY TRADERS FROM THE CYCLADES

*Cycladic Sculptors and their Methods*

SCHEMA OF HUMAN PROPORTIONS

AND

MINOAN MASONS' MARKS



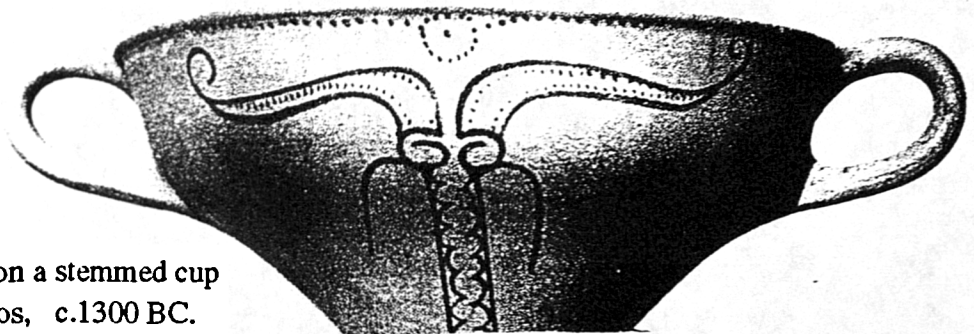
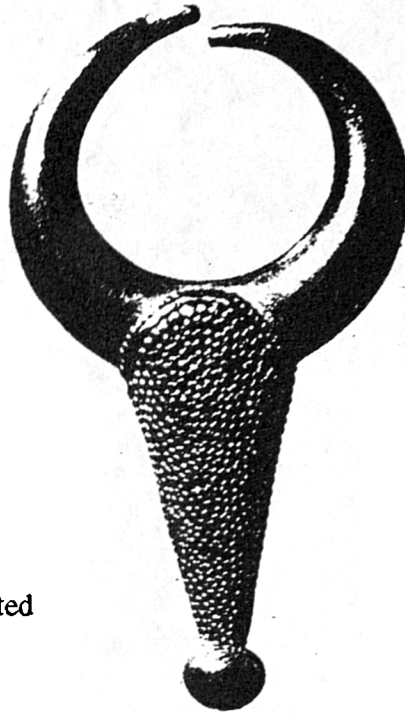
# APPENDIX 2.1



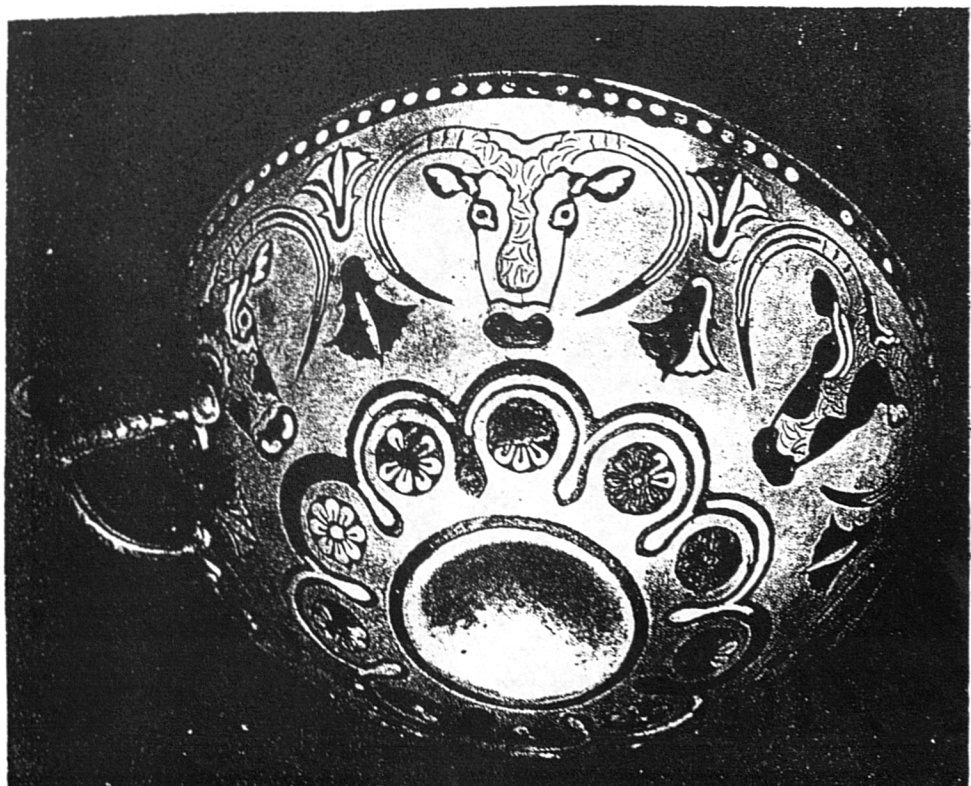
**GOLD EAR-RING c.1300 BC**

Found near Knossos, Crete.  
This style was common on Crete  
when elsewhere ear-rings were  
not being worn at all.

Described by Higgins (1967) as:-  
"a gold hoop with a large granulated  
pendant of conical shape".



Cretan motif on a stemmed cup  
from Kalymnos, c.1300 BC.



Motif combining  
the Bull's Head  
and the Horns of  
the Uterus.  
A silver cup from  
Enkomi, in Cyprus,  
c.1300 BC





ITALY AFTER 1454

## APPENDIX 2.3

# WEIMAR BAUHAUS

## 1919-1925

### From the FIRST PROCLAMATION of the WEIMAR BAUHAUS:

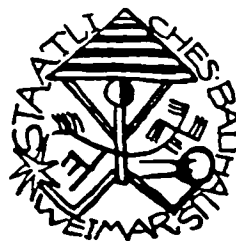
The complete building is the final aim of the visual arts. Their noblest function was once the decoration of buildings. Today they exist in isolation, from which they can be rescued only through the conscious, cooperative effort of all craftsmen. Architects, painters and sculptors must recognize anew the composite character of a building as an entity. Only then will their work be imbued with the architectonic spirit which it has lost as "salon art."

**Architects, sculptors, painters, we must all turn to the crafts**

Art is not a "profession." There is no essential difference between the artist and the craftsman. The artist is an exalted craftsman. In rare moments of inspiration, moments beyond the control of his will, the grace of heaven may cause his work to blossom into art. *But proficiency in his craft is essential to every artist.* Therein lies a source of creative imagination.

Let us create a *new guild of craftsmen*, without the class distinctions which raise an arrogant barrier between craftsman and artist. Together let us conceive and create the new building of the future, which will embrace architecture and sculpture and painting in one unity and which will rise one day toward heaven from the hands of a million workers like the crystal symbol of a new faith.

The first Bauhaus Seal



# Der Verfall der Weimarer Kunst.

Der Schriftsteller Heinrich Pillenfein, der in den Monaten seinen Wohnsitz von Berlin nach Weimar hat, gibt in der Weimarer Landeszeitung seine Meinung bekannt.

## Auflösung des Staatlichen Bauhauses in Weimar

### Schwindel-Propaganda.

Das Staatliche Bauhaus in Weimar.

### Sturm in Weimar

Unser Weimarer Kunstkorrespondent schreibt uns unterm 24. Januar:  
Der Kampf, der jetzt in Weimar um das Staatliche Bauhaus geführt wird, ist im Grunde...

## Staatliche Müllzufuhr.

## Der Bauhaus-Standal.

### Rettet das Bauhaus!

Eine Mahnung im letzten Augenblick

## Der Künstlerstreit in Weimar.

## Die Bedrohung Weimars.

Edwin Redlob.

## Der Schlag gegen das Bauhaus

Die neueste „Kulturtat“ der Thüringer Ordnungsregierung

## Kultur-Abbau in Thüringen

Die Völkischen verlangen den Abbau des Staatlichen Bauhauses

Kunstphilister.

Im Frühjahr 1919 hat der Architekt Walter Gropius sein Amt als Leiter des Staatlichen Bauhauses in Weimar niedergelegt. Wir haben sein Programm, das er in der Sitzung des Bauhauses am 15. April 1919...

## Der Kulturkampf in Thüringen.

Systematischer „Abbau der Republik“.

## Ein Protest der Weimarer Künstler.

## Für das Weimarer Bauhaus.

—J. Wenn politische Gesinnung und Kunst sich bekämpfen, einen sonderbaren Streit. Gesinnung schlägt die Menschen, nicht aber wehren sich, indem sie ihre Leistungen voran-

## Männer und Frauen von Weimar!

Unsere allberühmte Kunstschule, deren Bekanntheit und Weiterentwicklung auch wir wünschen, ist in Gefahr. Sie droht durch die einseitige Vorherrschaft einer bestimmten Richtung zerstört und ihres Lebens beraubt zu werden.

Obgleich man uns von gewisser Seite das Recht abspricht, in Kunstfragen mitzureden, bitten wir doch alle Weimarer, denen unsere Kunst und Kulturschätze heilig sind, sich an einer

### Öffentlichen Kundgebung

Donnerstag, 22. Januar, abends 8 Uhr, im Armbrustsaal zu beteiligen.

Alle Freunde der obigen Auffassung sind gebeten, sich mit zahlreich einzufinden.

Die gewählten Einwohnerräte.

## Bravo

Schlossmeister Arno Müller für die trefflichen Worte contra Bauhaus! Quousque tandem?

From a newspaper: Bravo, Locksmith Arno Müller, for your telling words against the Bauhaus! How long...?

### A FEW HEADLINES

The Collapse of Weimar Art  
Disintegration of the Staatliche Bauhaus  
Swindle-Propaganda  
Storm over Weimar  
Staatliche Rubbish  
Bauhaus Scandal  
Save the Bauhaus!  
The Menace of Weimar  
The Art War in Weimar  
The Assault on the Bauhaus  
Culture Demolition in Weimar  
The Cultural Fight in Thuringia  
Protest of the Weimar Artists

Men and women of Weimar!  
Our old and famous Art School is in danger!

All citizens of Weimar to whom the abodes of our art and culture are sacred, are requested to attend a public demonstration on Thursday, January 22, 1920, at 8 p.m.

The committees, elected by the citizens...

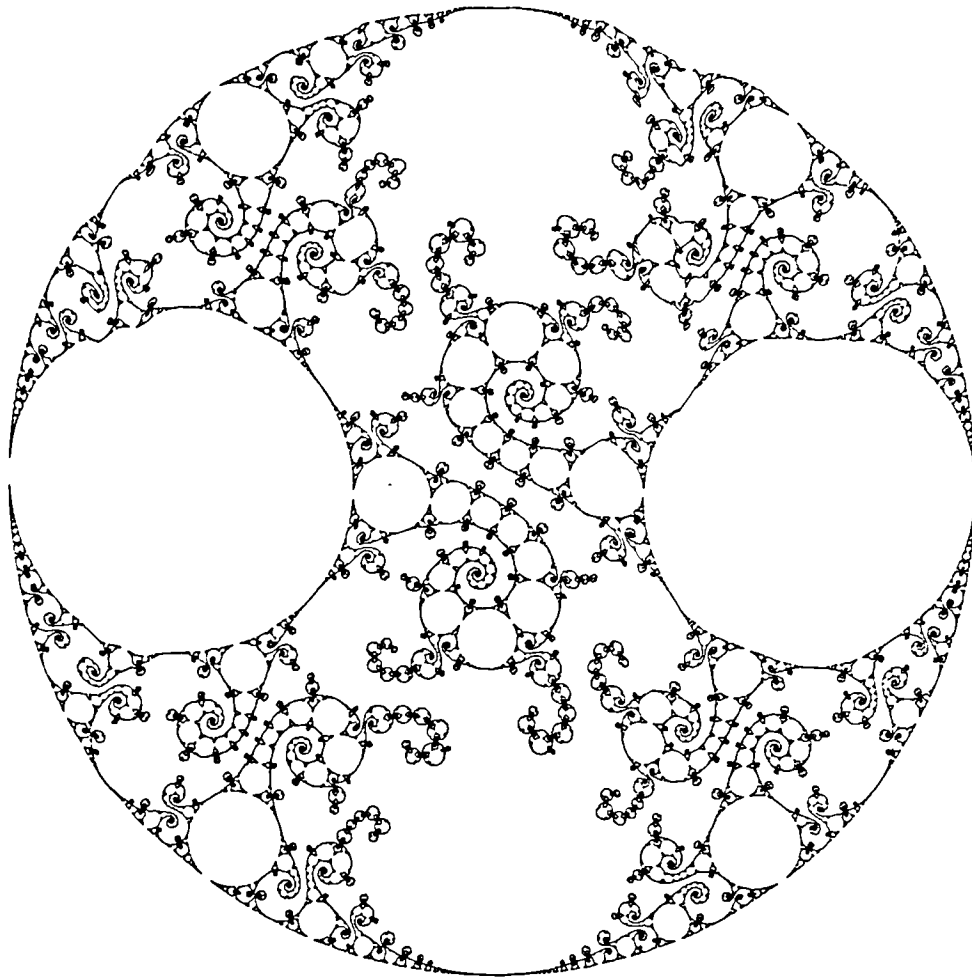


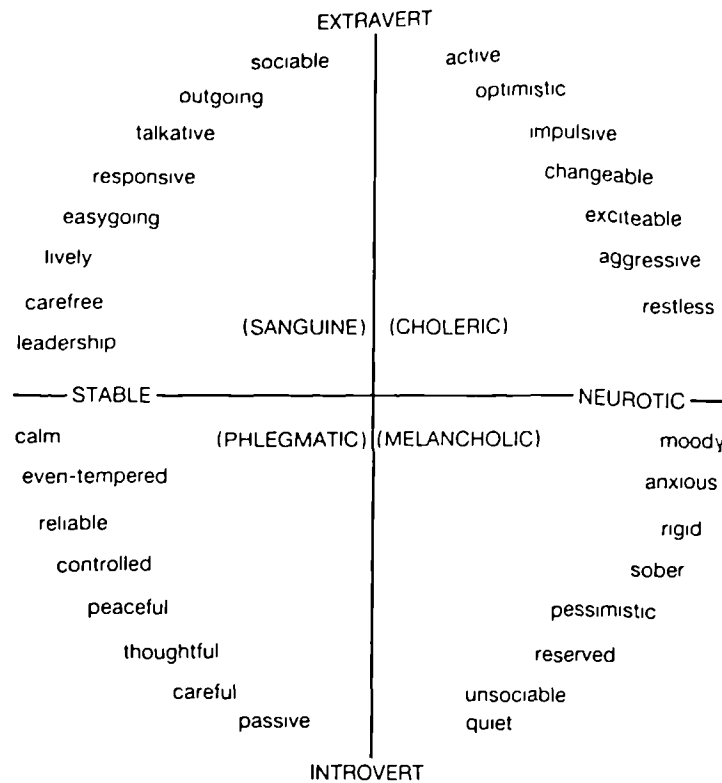
Plate 178 □ SELF-HOMOGRAPHIC FRACTAL, NEAR THE PEANO LIMIT

To the mathematician, the main interest of groups based upon inversions resides in their relation with certain groups of homographies. An homography (also called Möbius, or fractional linear transformation) maps the  $z$ -plane by  $z \rightarrow (az+b)/(cz+d)$ , where  $ad-bc=1$ . The most general homography can be written as the product of an inversion, a symmetry with respect to a line (which is a degenerate inversion), and a rotation. This is why, in the absence of rotation, the study of homographies learns much from the study of groups based on inversions. But it is obvious that allowing the rotations brings in new riches.

Here is an example of limit set  $\mathcal{L}$  for a group of homographies. David Mumford devised it (in the course of investigations inspired by the new results reported in this chapter), and kindly allowed its publication here. This shape is almost plane-filling, and shows uncanny analogies and differences with the almost plane-filling shape in Plate 191.

The fact that the limit set of a group of homographies is a fractal has been proven under wide conditions by T. Akaza, A. F. Beardon, R. Bowen, S. J. Patterson, and D. Sullivan. See Sullivan 1979. ■

# MODELS OF PERSONALITY



13.1 Eysenck's model of personality

The dimensions of Cattell's Sixteen Factor Theory of personality are as follows:

A	reserved	outgoing
B	less intelligent	more intelligent
C	affected by feelings	emotionally stable
E	submissive	dominant
F	serious	happy-go-lucky
G	expedient	conscientious
H	timid	venturesome
I	tough-minded	sensitive
L	trusting	suspicious
M	practical	imaginative
N	forthright	shrewd
O	self-assured	apprehensive
Q1	conservative	experimenting
Q2	group-dependent	self-sufficient
Q3	uncontrolled	controlled
Q4	relaxed	tense

13.2 Cattell's 16 personality factors



School of Education

# Creativity

QUESTIONNAIRE FOR SIXTH FORMERS AND COLLEGE STUDENTS

If you feel your answers need explaining or qualifying, please feel free to write comments anywhere on the questionnaire. Should you prefer not to answer some of the questions, please just leave these blank. The answers you give will be treated **STRICTLY CONFIDENTIALLY** and will simply be used in statistical analyses at the university.

## YOUR EXAMINATIONS

Please complete the following table:

Indicate the subjects you took for GCSE by putting the **GRADE YOU GOT** in the appropriate column. Leave blanks for the subjects you didn't take.  
(Please ignore the numbers; they are just for computer use)

	GRADE AT GCSE	GRADE AT O LEVEL	GRADE AT CSE
ART	01	31	61
BIOLOGY	02	32	62
BUSINESS STUDIES	03	33	63
CHEMISTRY	04	34	64
COMPUTER STUDIES	05	35	65
CRAFT DESIGN, TECHNOLOGY	06	36	66
ECONOMICS	07	37	67
ENGLISH LANGUAGE	08	38	68
ENGLISH LITERATURE	09	39	69
FRENCH	10	40	70
GENERAL STUDIES	11	41	71
GEOGRAPHY	12	42	72
GERMAN	13	43	73
HISTORY	14	44	74
HOME ECONOMICS	15	45	75
INTEGRATED HUMANITIES	16	46	76
LATIN	17	47	77
MATHEMATICS	18	48	78
AVO MATHS	19	49	79
MUSIC	20	50	80
PHYSICS	21	51	81
PSYCHOLOGY	22	52	82
RELIGIOUS EDUCATION	23	53	83
SCIENCE	24	54	84
SOCIOLOGY	25	55	85
SPANISH	26	56	86
TECHNICAL DRAWING	27	57	87
OTHERS	28	58	88
OTHERS	29	59	89
OTHERS	30	60	90

Other qualifications RSA..... 91  
City and Guilds..... 92  
Others..... 93

## ABOUT YOURSELF AND YOUR FAMILY

NAME
AGE
HOME ADDRESS
TELEPHONE
LOCAL ADDRESS
TELEPHONE
NAME OF YOUR SECONDARY SCHOOL
NAME OF PRESENT SCHOOL/COLLEGE

01 CLERICAL WORKER	07 PROFESSIONAL	11 SHOP WORKER
02 DECEASED	08 RETIRED	12 SKILLED WORKER
03 DIRECTOR	09 SALES EXECUTIVE	13 STUDENT
04 DON'T KNOW	10 SELF EMPLOYED/BUSINESS	14 TRADESMAN
05 MANAGER		15 HOUSEWIFE
		16 UNEMPLOYED

Which of the above apply to your mother? ..... Answer here → ☐

Which of the above apply to your father? ..... ☐

What sort of job are you aiming for in the long run? ..... ☐

Please use this scale to answer: 1 = YES  
2 = NO

During this school year and last school year, have you, through your school or college...

Played on a team (sports)? ..... Answer here → <input type="checkbox"/>
Played on a non-sports team (eg chess)?..... <input type="checkbox"/>
Taken part in a debate?..... <input type="checkbox"/>
Played in a band or orchestra?..... <input type="checkbox"/>
Participated in the Duke of Edinburgh Award?..... <input type="checkbox"/>
Acted in a play or other kind of stage production?..... <input type="checkbox"/>
Sung in a chorus or choir?..... <input type="checkbox"/>
Participated in a hobby club (eg photography, crafts)?..... <input type="checkbox"/>
Taken part in an organisation such as scouts, guides?..... <input type="checkbox"/>
Taken part in a religious organisation?..... <input type="checkbox"/>
Gone abroad?..... <input type="checkbox"/>
Gone on a day trip, visited theatre or museum?..... <input type="checkbox"/>
Gone on an extended trip in the UK?..... <input type="checkbox"/>
Taken part in outdoor activities (eg walking, climbing etc)?..... <input type="checkbox"/>
Received instruction in study skills?..... <input type="checkbox"/>
- If YES, how many days approximately?..... <input type="checkbox"/>

## ART LESSONS

About how much time have you generally spent out of lessons (ie on "homework") on THIS subject EACH WEEK?.....	Hours
How many students are in your class for this subject?.....	9
How many hours per week are timetabled for this subject?.....	13
How many teachers, not counting supply teachers, have been teaching you this subject (this year and last)?.....	15

To what extent were the following statements true for you, generally, for this subject this school year?

Please indicate your answers below by using the following 5 point scale:

- 1 = not true of me at all  
2 = not really true of me  
3 = occasionally true of me  
4 = this was fairly true of me  
5 = this was very true of me

(a) I found it hard to get down to work in this subject.....	<input type="checkbox"/>
(b) I looked forward to lessons in this subject.....	<input type="checkbox"/>
(c) I thought about this subject a lot, even in my spare time.....	<input type="checkbox"/>
(d) I regretted taking this subject.....	<input type="checkbox"/>
(e) I preferred this subject to any of my other subjects.....	<input type="checkbox"/>
(f) I spent more time on this subject than any other.....	<input type="checkbox"/>

Fluency	- a mechanically efficient mental capacity for the realisation and communication of ideas.
Flexibility	- adaptability, acceptance of change, not demanding rigid permanent concepts.
Sensitivity	- perceptive and receptive awareness.
Originality	- desire for invention, novelty, individuality, curiosity and change.
Imagination	- a more general facility for the production and synthesis of ideas/abstractions into recognisable and communicable images.
Motivation	- commitment to subject, Emotional involvement

MARK YOURSELF ON THESE FACTORS using the scale 1 = low to 5 = high		Low < High				
		1	2	3	4	5
Fluency						
Flexibility						
Sensitivity						
Originality						
Imagination						
Motivation						

Please use the scale 1 = Yes 2 = No	
Do you believe that if somebody studies hard enough he or she can pass any subject?.....	<input type="checkbox"/>
Do you feel that it is nearly impossible to change your parents' minds about anything?.....	<input type="checkbox"/>
Do you feel that when you do something wrong there is very little you can do to make it right?.....	<input type="checkbox"/>
Do you feel that one of the best ways to handle most problems is just not to think about them?.....	<input type="checkbox"/>
Do you believe that when bad things are going to happen they are just going to happen no matter what you try to do to stop them?.....	<input type="checkbox"/> 35

For the next three questions use 1 = Agree 2 = Not sure 3 = Disagree	
People who accept their condition in life are happier than those who try to change things.....	<input type="checkbox"/>
Every time I try to get ahead, something or somebody stops me.....	<input type="checkbox"/>
I would make any sacrifice to get ahead in the world.....	<input type="checkbox"/> 38

Please answer the following questions by ticking the appropriate column:

- A Which of these modes of instruction were used by your Art teacher?  
B Which was used most frequently?  
C Which produced the most original/imaginative work from you?

	A	B	C
PROJECTS: individual or group work explored/extended/researched outside the classroom			
DRILL/REPETITION: memorizing facts/information by repetition			
PEER TUTORING: one to one teaching by pupil to pupil			
OPEN DISCUSSION: group exchanging/debating ideas and opinions			
TEACHING GAMES: play, controlled by teacher to develop learning skills, eg. memory, listening, concentration			
INDEPENDENT STUDY: working without teacher intervention			
MEDIA BASED PROGRAMMED INSTRUCTION: audio/visual teaching package			
LECTURE: formal oration by teacher to passive group			
SIMULATION: model or analogy of 'real' situation for pupil participation			
COUNSELLING: listening/questioning/advising in a caring situation			
SELF ASSESSMENT/AWARENESS: constructive self analysis/criticism of own achievements			
CRITICAL EVALUATION: relating work to given criteria or values, learning to discriminate			
DRAMA TECHNIQUES: exploring attitudes/issues through role play and dramatic improvisation			
OPEN INTERACTIVE LEARNING: negotiation between pupils and teacher about the organisation and processes of learning			

Which of these categories best fits the ART TEACHER who had most influence on your work?

AUTHORITARIAN	gives instructions, has fixed ideas	
DEMOCRATIC	prepared to discuss issues/opinions	
NON-INTERFERENCE	values your contribution, and free expression	

What do you think this teacher's main aim was in your Art lessons?

THE GIVING OF INFORMATION/FACTS/KNOWLEDGE/OPINIONS	
INTRODUCING PROBLEMS AND SHOWING YOU HOW TO SOLVE THEM	
DISCUSSING TOPICS/IDEAS WITH YOU TO DEVELOP YOUR ABILITIES	

Educationalists recognize four main types of student, in which group would you place yourself?

AS	Works steadily but likes to move about the room. Values the approval of the teacher. Responds to rather than initiates ideas.	
IW	Works steadily but is easily distracted. Avoids contact with teacher where possible. Initiates discussions with other peers.	
SW	Content to work alone. Needs little teacher or peer contact. Appears passive but is independent and determined.	
QC	Works steadily but prefers group activities. Relies heavily on teacher support and approval.	

DESCRIBE, IN YOUR OWN WORDS, A TYPICAL ART LESSON

DESCRIBE, IN YOUR OWN WORDS, THE TYPE OF LESSON WHICH PRODUCED YOUR MOST ORIGINAL AND IMAGINATIVE WORK

DESCRIBE, IN YOUR OWN WORDS, THE WORST ART LESSON YOU EVER HAD



# ART PREFERENCES

From each of the pairs of drawings below,  
using your own judgement, choose the one you prefer.

Mark your preference  
in the box provided.



A



B

A	
B	
None	

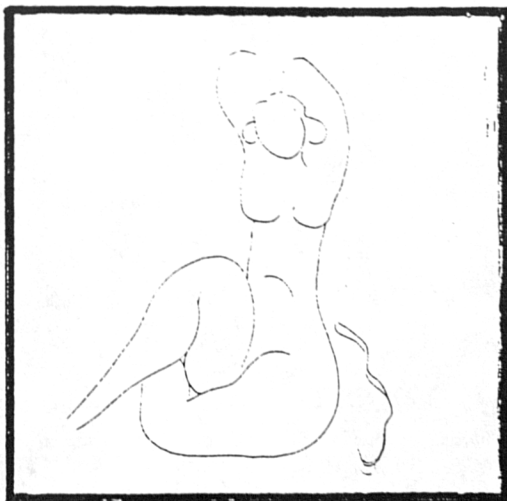


A

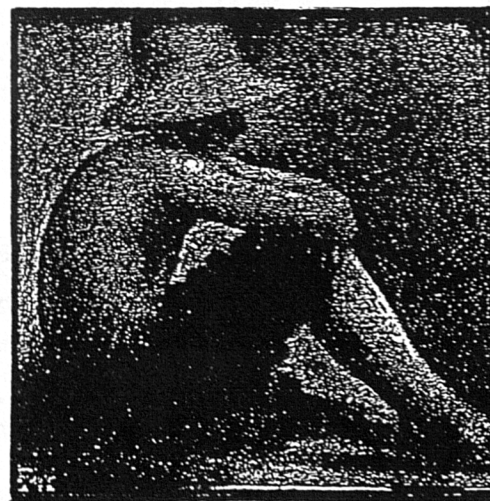


B

A	
B	
None	



A



B

A	
B	
None	

## ART PREFERENCES

From each of the pairs of drawings below, using your own judgement, choose the one you prefer.



A



B

A	
B	
None	

Mark your preference in the box provided

## ART PREFERENCES

From each of the pairs of drawings below, using your own judgement, choose the one you prefer.



A



B

A	
B	
None	

Mark your preference in the box provided



A



B

A	
B	
None	



A



B

A	
B	
None	



A



B

A	
B	
None	



A



B

A	
B	
None	

## ART PREFERENCES

From each of the pairs of drawings below, using your own judgement, choose the one you prefer.



A



B

A	
B	
None	

Mark your preference in the box provided



A



B

A	
B	
None	

Mark your preference in the box provided.



A



B

A	
B	
None	



A



B

A	
B	
None	



A



B

A	
B	
None	



A



B

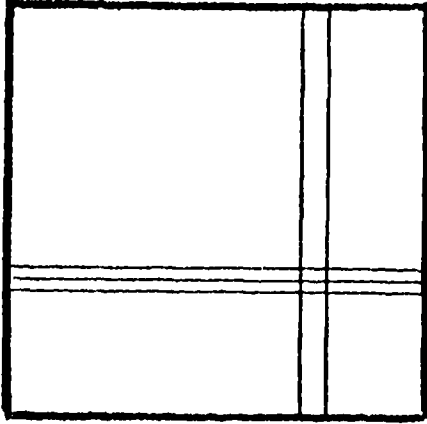
A	
B	
None	

From each of the pairs of drawings below, using your own judgement, choose the one you prefer.

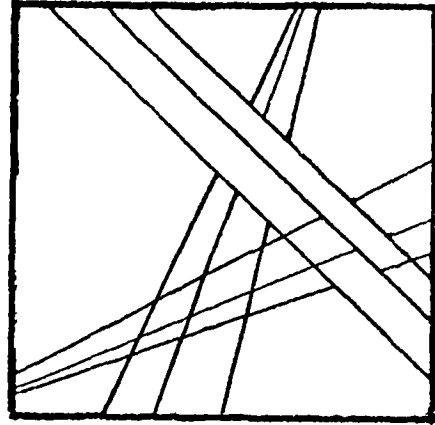
# ART PREFERENCES

Mark your preference in the box provided

1



A

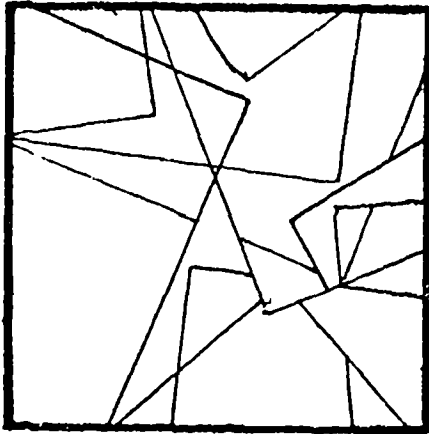


B

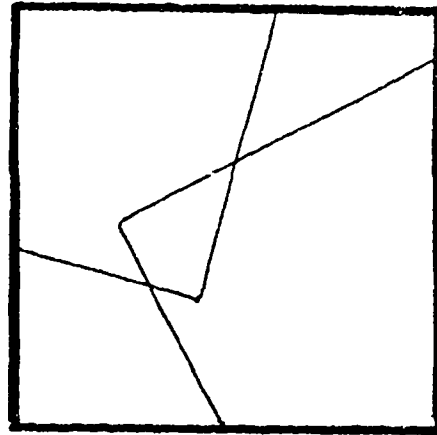
14

A	
B	

2



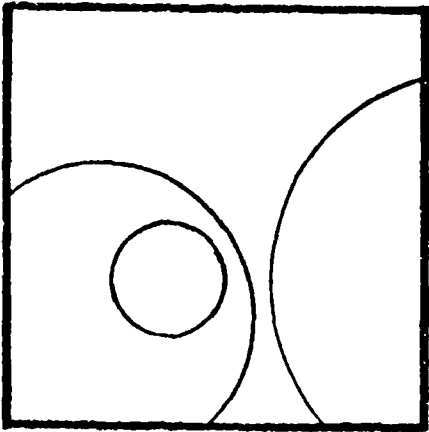
A



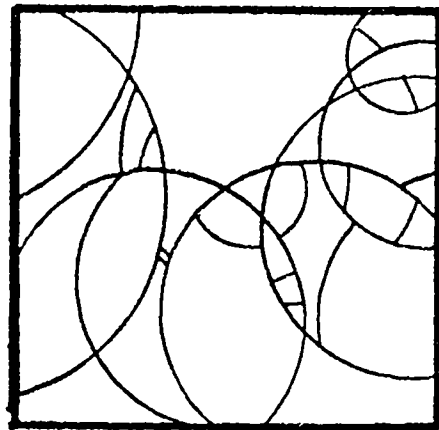
B

A	
B	

3



A



B

A	
B	

4

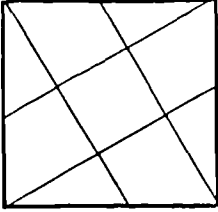
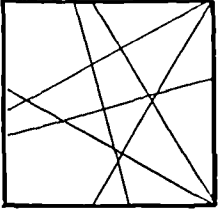
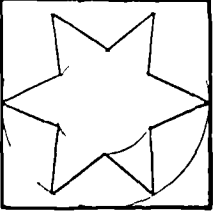
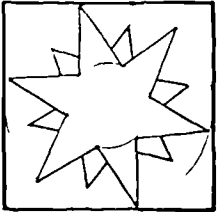
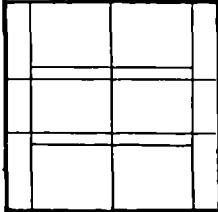
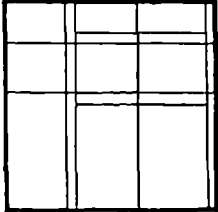
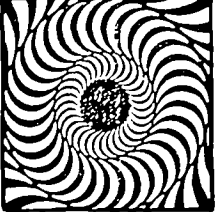

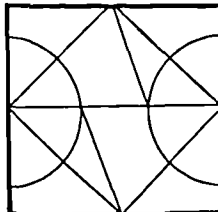
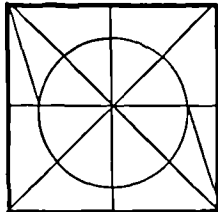
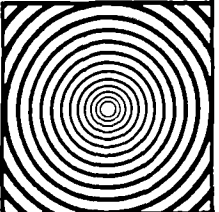
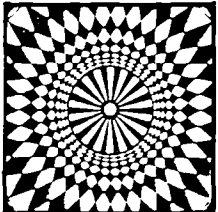
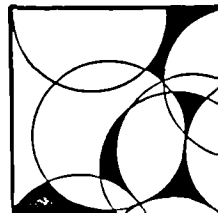
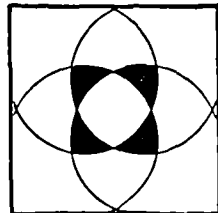
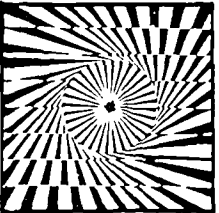
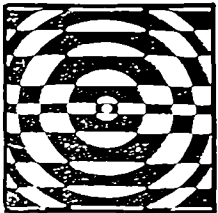
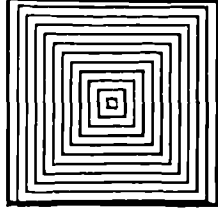
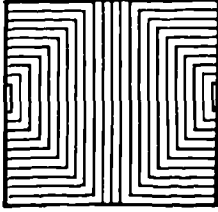
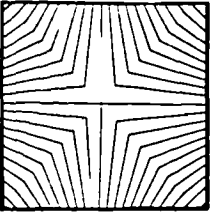
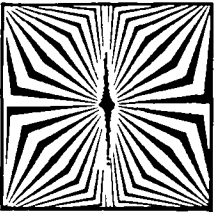
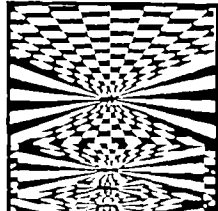
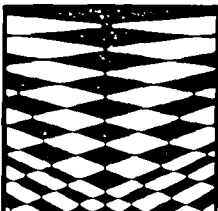
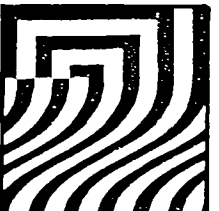

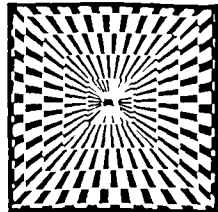
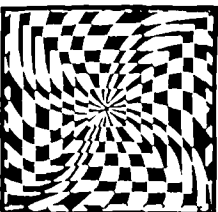
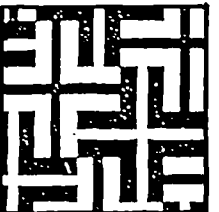
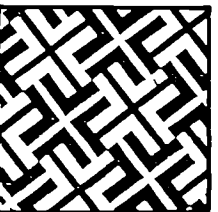
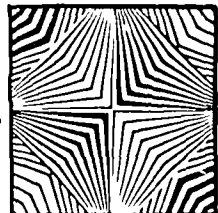
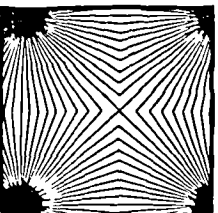
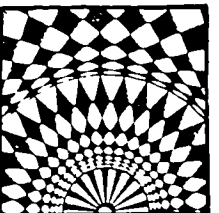
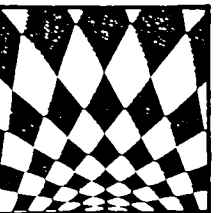


A	
B	


From each of the pairs of drawings below  
choose the one you prefer


Mark your preference  
in the box provided


Mark your preference  
in the box provided


5		A		B		A		B	
6		A		B	10		A		B
7		A		B	11		A		B
8		A		B	12		A		B
13		A		B	17		A		B
14		A		B	18		A		B
15		A		B	19		A		B
16		A		B	20		A		B

# APPENDIX 4.4a

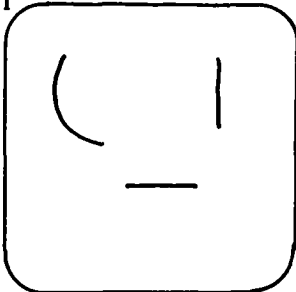


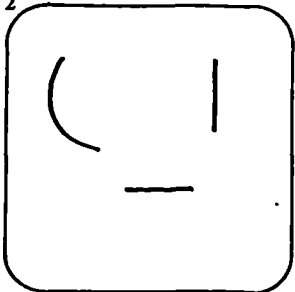


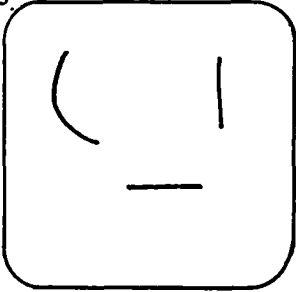


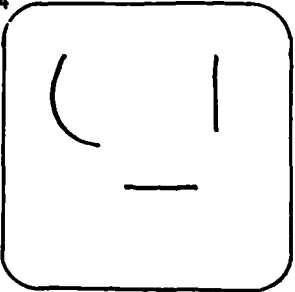


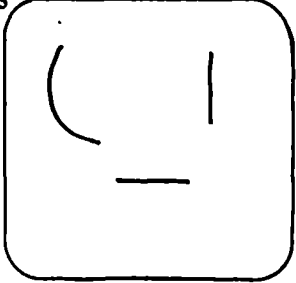
Including these three lines in your work, produce 12 different images/pictures, either abstract or representational. Remember it is the variety that is important not the quality of the drawing. Give titles if appropriate.

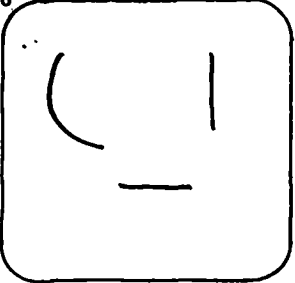
1

2

3

4

5

6

List 10 famous artists you know, in the order they came into your head.

1	6
2	7
3	8
4	9
5	10

Do you have a favourite artist?

What, in particular, attracted you to his work?

Do you have a favourite art 'movement' or 'ism'?

What interests you especially about them?

What do you think is the primary purpose of 'Art'?

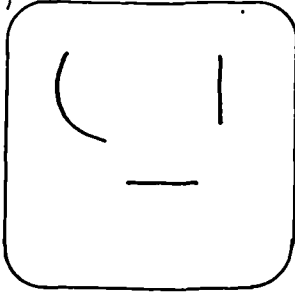
List the following aspects of Art in your personal order of priority. If you are not happy with these words, please add or use your own.

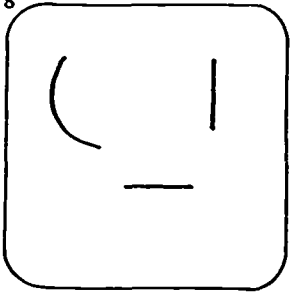
COMPOSITION	1
COLOUR	2
EMOTION	3
FORM	4
RELATIONSHIP	5

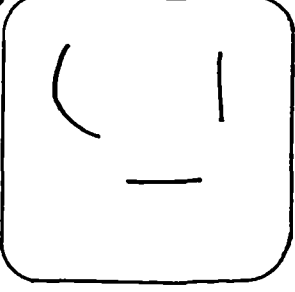
What are you trying to achieve in your own work?

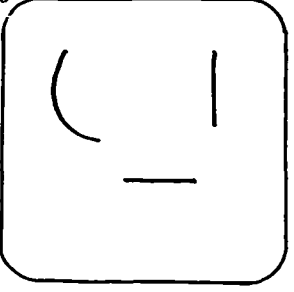
Who or what do you think is the major influence on your personal work?

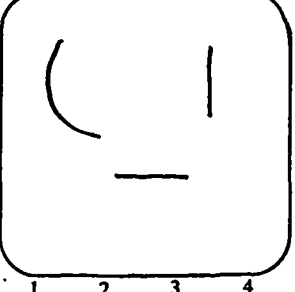
How has this influence shown itself in your work?

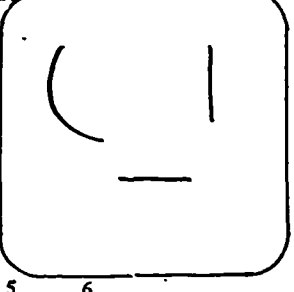
7

8

9

10

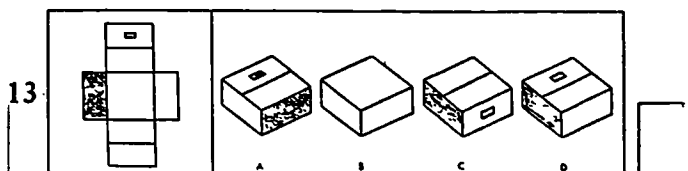
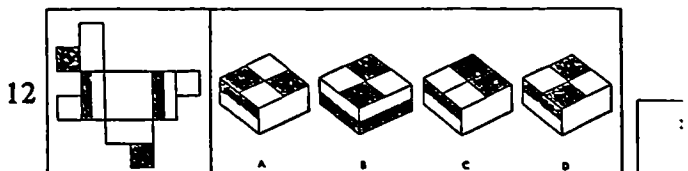
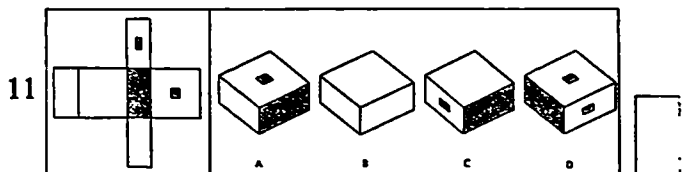
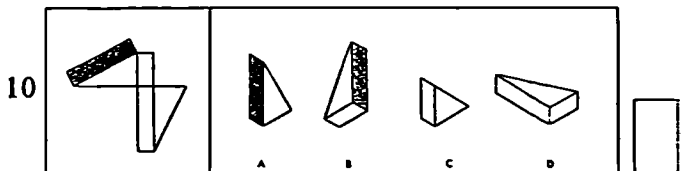
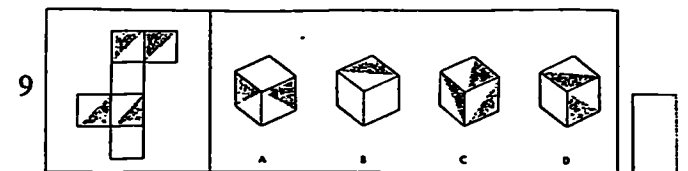
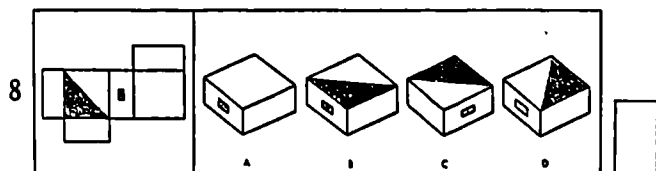
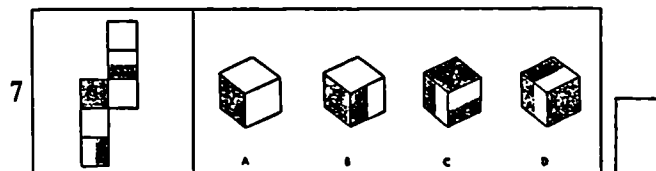
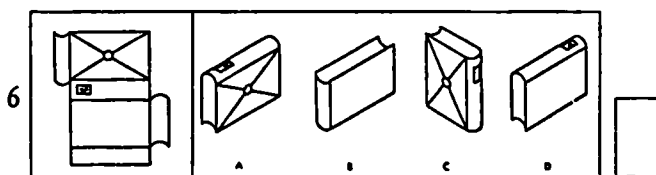
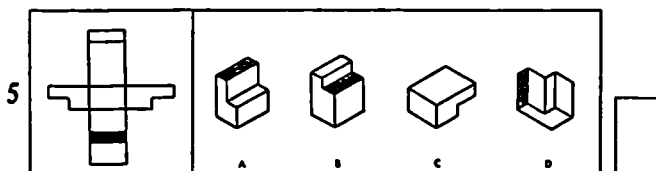
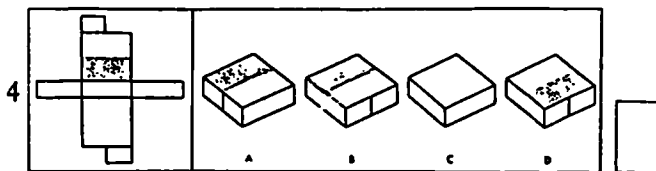
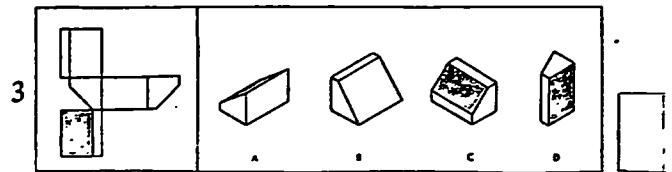
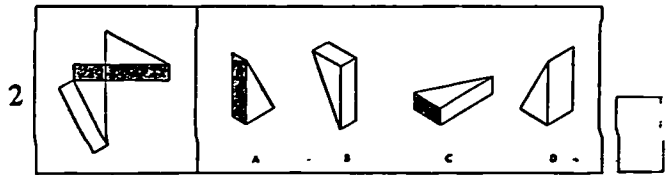
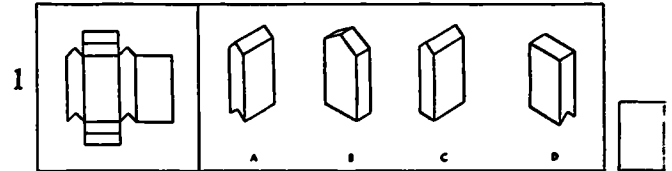
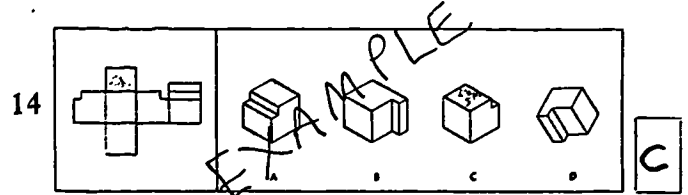
11

12

1	2	3	4	5	6		
7	8	9	10	11	12		

## DIRECTIONS

This test consists of flat patterns which can be folded into 3 Dimensional shapes/models. To the right of each pattern there are four figures. You are to decide which one of these figures can be made from the pattern shown. The pattern always shows the outside of the figure. In every row there is only one correct figure.



The following questions are in the form of self assessment. There are no 'right' or 'good' answers, and any questions you do not understand or do not wish to answer, please leave blank.

Please tick the box in column 'A' next to the answer which best fits your opinion or personality.

In the boxes in column 'B' please write the number

which shows the confidence you have in the accuracy of your answer.

Score: Very certain .....4

Fairly Certain .....3

Not Sure .....2

Very Uncertain .....1

			A	B
12	HOW OFTEN DO YOU HAVE ORIGINAL OR UNUSUAL IDEAS?	FREQUENTLY		4
		SOMETIMES	✓	
		OCCASIONALLY		
		NEVER		

1	IN COMPARISON TO YOUR OWN AGE GROUP, HOW WOULD YOU RATE YOUR 'INTELLIGENCE'?	EXCEPTIONAL		
		ABOVE AVERAGE		
		ABOUT AVERAGE		
		BELOW AVERAGE		
2	HOW OFTEN DO YOU HAVE ORIGINAL OR UNUSUAL IDEAS?	FREQUENTLY		
		SOMETIMES		
		OCCASIONALLY		
		NEVER		
3	CAN YOU TALK EASILY, FLUENTLY, AND FIND THE RIGHT WORDS TO EXPRESS WHAT YOU MEAN?	ALWAYS		
		USUALLY		
		SOMETIMES		
		OCCASIONALLY		
4	DO YOU LIKE TO USE YOUR 'IMAGINATION' TO DAYDREAM, TO FANTASIZE, TO INVENT?	OFTEN		
		SOMETIMES		
		OCCASIONALLY		
		NEVER		
5	HOW ADAPTABLE/FLEXIBLE ARE YOU IN YOUR WAY OF THINKING, CAN YOU ADJUST YOUR METHODS TO SUIT DIFFERENT PROBLEMS?	ALWAYS		
		USUALLY		
		SOMETIMES		
		NEVER		
6	WHEN TRYING TO UNDERSTAND NEW INFORMATION DO YOU LIKE TO USE COMPARISONS ANALOGIES METAPHORS	ALWAYS		
		USUALLY		
		SOMETIMES		
		NEVER		
7	HOW QUICK ARE YOU AT MAKING DECISIONS, COMING TO CONCLUSIONS, MAKING UP YOUR MIND?	VERY		
		QUITE		
		FAIRLY		
		SLOW		



			A	B
8	DO YOU PREFER TO USE YOUR OWN JUDGMENT RATHER THAN REPLY ON THE OPINION OF OTHERS?	ALWAYS SOMETIMES SOMETIMES NEVER		
9	HOW MUCH DO YOU ENJOY NOVELTY SURPRISES INNOVATIONS UNIQUENESS	VERY MUCH QUITE A LOT SOMETIMES NOT REALLY		
10	IN THINKING AND BEHAVIOUR HOW LOGICAL RATIONAL COHERENT CLEAR ARE YOU	VERY ALLY SOMETIMES NOT AT ALL		
11	HOW GOOD ARE YOU AT VISUALIZING, MAKING OR SEEING MENTAL IMAGES OR PICTURES?	VERY QUITE SOMETIMES POOR		
12	HOW PERCEPTIVE/ASTUTE/DISCERNING ARE YOU? CAN YOU SEE THROUGH FIRST IMPRESSIONS? CAN YOU AVOID BEING INFLUENCED BY STEREOTYPES/LABELS/IMAGE	VERY QUITE NOT VERY NOT AT ALL		
13	HOW COMFORTABLE ARE YOU IN SITUATIONS THAT ARE UNSTRUCTURED/DISORGANISED/ CONFUSED CHAOTIC ANARCHIC?	VERY QUITE NOT VERY NOT AT ALL		
14	CAN YOU UNDERSTAND NON VERBAL COMMUNICATION BODY LANGUAGE/ GESTURES/FACIAL EXPRESSIONS/ SIGNS ETC?	VERY EASILY QUITE EASILY SOMETIMES NOT AT ALL		
15	DO YOU QUESTION NORMS OF BEHAVIOUR SOCIAL RULES CONVENTIONS CUSTOMS	ALWAYS FREQUENTLY SOMETIMES NEVER		
16	WHEN FACED WITH A GIVEN SITUATION HOW OFTEN DO YOU ASK WHY THIS IS SO? WHY DID THIS HAPPEN? WHY MUST THIS BE SO?	ALWAYS USUALLY SOMETIMES NEVER		
17	HOW AWARE ARE YOU OF GAPS IN YOUR KNOWLEDGE OR EXPERIENCE?	VERY MUCH TEN OCCASIONALLY NOT AT ALL		
18	DO YOU LIKE TO DEVELOP YOUR EXISTING KNOWLEDGE, AND EXTEND IT BY EXPLORATION AND EXPERIMENT?	VERY MUCH SOMETIME OCCASIONALLY NOT AT ALL		

			A	B
19	DO YOU FEEL EMPATHY WITH OR SENSITIVITY TO THE NEEDS OF OTHERS?	ALWAYS SOMETIMES SOMETIME OCCASIONALLY		
20	DO YOU CONSCIOUSLY DISTANCE YOURSELF FROM YOUR SOCIAL GROUP?	FREQUENTLY SOMETIMES OCCASIONALLY NEVER		
21	HOW IMPORTANT IS IT TO YOU FOR YOUR WORK TO BE CONSIDERED SCRUPULOUSLY HONEST, AND THAT YOU SHOULD HAVE INTEGRITY?	VITAL VERY QUITE NOT ESSENTIAL		
22	DO YOU EVER, IN YOUR OWN MIND, FEEL TENSION OR CONFLICT BETWEEN YOURSELF AND YOUR SOCIAL GROUP?	FREQUENTLY SOMETIMES OCCASIONALLY NEVER		
23	WHEN FACED WITH OPPOSITION/ANTAGONISM/ HOSTILITY, DO YOU PREFER TO CONFRONT IT OR WALK AWAY?	ALWAYS FACE UP USUALLY FACE UP SOMETIMES FACE NEVER FACE UP		
24	HOW PREPARED ARE YOU TO TAKE INTELLECTUAL RISKS TO SPECULATE, TO FORM A HYPOTHESIS, TO DEFEND AN UNPOPULAR POINT OF VIEW?	ALWAYS SOMETIMES OCCASIONALLY NEVER		
25	HOW DETERMINED DEDICATED TENACIOUS PERSISTENT ARE YOU?	VERY QUITE NOT VERY NOT AT ALL		
26	ARE YOU A NATURALLY CURIOUS, INQUISITIVE PERSON, ALWAYS SEARCHING FOR ANSWERS?	VERY MUCH QUITE NOT REALLY NOT AT ALL		
27	DO YOU WELCOME NEW EXPERIENCES?	VERY MUCH SOMETIMES OCCASIONALLY NOT AT ALL		
28	DO YOU FIND YOUR MAIN SUBJECT, OCCUPATION, INTEREST, TOTALLY FASCINATING AND ABSORBING?	ALL THE TIME USUALLY SOMETIMES NOT AT ALL		
29	HOW MUCH SELF-DISCIPLINE DO YOU HAVE?	A LOT QUITE A BIT NOT MUCH NONE AT ALL		

			A	B
30	DO YOU RESIST OR REJECT OTHER PEOPLE'S LIMITS WHEN THEY ARE IMPOSED ON YOU?	VERY MUCH ALLY OCCASIONALLY NEVER		
31	DO YOU EVER FEEL ISOLATED FROM YOUR SOCIAL GROUP?	FREQUENTLY SOMETIMES OCCASIONALLY NEVER		
32	DO YOU HAVE A STRONG COMMITMENT TO YOUR WORK?	VERY STRONG QUITE STRONG NOT VERY STRONG NOT AT ALL		
33	HOW MUCH OF YOUR TIME DO YOU SPEND PLAYING WITH IDEAS?	EVERY OPPORTUNITY QUITE OFTEN OCCASIONALLY NOT AT ALL		
34	DO YOU HAVE INTENSE FEELINGS/EMOTIONS?	ALWAYS SOMETIMES OCCASIONALLY NOT AT ALL		
35	ARE YOU AN INTUITIVE PERSON DO YOU HAVE STRONG INSTINCTS AND INSIGHT?	ALWAYS SOMETIMES OCCASIONALLY NOT AT ALL		
36	DO YOU CONSIDER YOURSELF A FREE SPIRIT?	VERY SOMETIMES NOT REALLY NOT AT ALL		
37	DO YOU PLACE HIGH VALUE ON ORIGINALITY?	VERY HIGH QUITE HIGH NOT REALLY NOT AT ALL		
38	WHAT IS YOUR REACTION TO UNCONVENTIONAL BEHAVIOUR OR DRESS?	VERY POSITIVE ACCEPTABLE NOT BOTHERED DON'T LIKE IT		
39	DO YOU PREFER COMPLEX/INTERESTING PROBLEMS OR SITUATIONS TO THOSE MORE SIMPLE?	VERY MUCH USUALLY SOMETIMES NO		
40	IS YOUR SELF CONFIDENCE EASILY UNDERMINED BY YOUR SELF-CRITICISM?	OFTEN SOMETIMES NOT REALLY NEVER		

			A	B
41	DO YOU FEEL THE NEED FOR, OR STRIVE FOR RECOGNITION OF YOUR ABILITY?	OFTEN SOMETIMES NOT REALLY NOT AT ALL		
42	HOW WELL ARE YOU ABLE TO ORGANIZE YOURSELF?	VERY WELL QUITE WELL SOMETIMES HARDLY EVER		
43	DO YOU PREFER TO SET YOUR OWN RULES?	ALWAYS USUALLY SOMETIMES NOT BOTHERED		
44	DO YOU FEEL THE NEED IN YOUR WORK TO BE COMPETENT PROFICIENT SKILLFUL?	STRONGLY SOMETIMES OCCASIONALLY NOT AT ALL		
45	ARE YOU OFTEN WITHDRAWN 'REFLECTIVE' 'PRE-OCCUPIED' WITH YOUR OWN THOUGHTS?	FREQUENTLY SOMETIMES OCCASIONALLY HARDLY EVER		
46	DO YOUR ACTIONS OR OPINIONS HAVE AN IMPACT OR INFLUENCE ON OTHERS?	OFTEN SOMETIMES OCCASIONALLY RARELY		
47	HOW TOLERANT ARE YOU OF AMBIGUITY, OF THINGS THAT HAVE MORE THAN ONE MEANING?	VERY QUITE NOT VERY NOT AT ALL		
48	DO YOU HAVE A BROAD RANGE OF INTERESTS?	VERY QUITE NOT VERY NOT AT ALL		
49	HOW EASY DO YOU FIND IT TO MOTIVATE YOURSELF TO WORK?	VERY USUALLY SOMETIMES DIFFICULT		
50	HOW OFTEN DO YOU LOOK FOR OUTSIDE STIMULUS IN YOUR WORK?	ALWAYS FREQUENTLY SOMETIMES OCCASIONALLY		

# APPENDIX 4.7

## PERSONAL QUALITIES

Schooling is supposed to train the character as well as the mind. Unfortunately, there is little agreement - even among experts - about which qualities are desirable and which are not. Say whether you, personally, approve or disapprove of the qualities listed below.

	Strongly Approve	Mildly Approve	?	Mildly Disapprove	Strongly Disapprove
Mixing well, socially					
Personally neat and tidy					
Obedient					
Low opinion of yourself					
Highly imaginative					
Respect for adults					
Independent of parents					
Mildly eccentric					
Having set opinions					
Accepting expert advice					
'Any' clothes					
Trying to be original					
Using bad language					
Very well mannered					
Good team member					
Artistic sensitivity					

HOW IMPORTANT IS IT FOR YOU TO:-  
mark: 1 = very 3 = not sure 5 = never  
2 = quite 4 = not really

	1	2	3	4	5
REALIZE YOUR FULL POTENTIAL?					
BE HAPPY/FULFILLED IN YOUR LIFE?					
WIN THE RESPECT OF OTHERS?					
RETAIN YOUR INDIVIDUALITY?					

WHICH OF THESE CHARACTERISTICS APPLY TO YOU:-

mark: 1 = always 3 = sometimes 5 = never  
2 = usually 4 = occasionally

	1	2	3	4	5
I ACCEPT REALITY PHILOSOPHICALLY					
I KNOW MYSELF (PERSONALITY) WELL					
I AM SPONTANEOUS					
I PREFER SIMPLE NATURAL THINGS					
I LIKE TO SOLVE PROBLEMS					
I LIKE TO BE PRIVATE, DETACHED					
I AM AUTONOMOUS (LIKE TO CONTROL MY OWN LIFE)					
I AM INDEPENDENT					
I AM WILFUL					
I AM ACTIVE					
I LIKE TO LEARN NEW THINGS					
I ACCEPT THAT THERE ARE MYSTIC EXPERIENCES					
I PREFER DEMOCRATIC SITUATIONS					
I HAVE AN UNHOSTILE SENSE OF HUMOUR					
I RESIST STEREOTYPING LABELS					
I AM EMPATHETIC TOWARDS OTHERS					

## CULTURE QUIZ

Match the Works to the Producer/Performers

ANSWERS

A The Grapes of Wrath	1 R Adams	A
B The Godfather	2 L Armstrong	B
C The Four Seasons	3 J Austen	C
D The Last Resort	4 J S Bach	D
E The School of Athens	5 M Bragg	E
F The War of the Worlds	6 M Brando	F
G Geodesic Astrodome	7 J Constable	G
H Out of Africa	8 C Dickens	H
I Be Bop	9 P Domingo	I
J War and Peace	10 J Donovan	J
K E T	11 B Dylan	K
L Black, Brown and Beige	12 E Elgar	L
M The South Bank	13 T S Eliot	M
N Evita	14 D Ellington	N
O The Last Supper	15 R B Fuller	O
P Ramsey Street	16 V van Gogh	P
Q Watership Down	17 W Golding	Q
R Fashion Design	18 G Holst	R
S Mull of Kintyre	19 D H Lawrence	S
T Lord of the Rings	20 P McCartney	T
U Toccata	21 C Monet	U
V Muskrat Ramble	22 J Nicholson	V
W Lady Chatterley's Lover	23 C Parker	W
X Daffodils	24 P Picasso	X
Y The Planets	25 E Presley	Y
Z Don Giovanni	26 Raphael	Z
a Cuckoo's nest	27 Z Rhodes	a
b Blue Suede Shoes	28 J Ross	b
c Pride and Prejudice	29 W Shakespeare	c
d Tale of Two Cities	30 S Spielberg	d
e Guernica	31 J Steinbeck	e
f The Waste Land	32 M Streep	f
g Lord of the Flies	33 D Thomas	g
h Impression, Sunrise	34 J R Tolkien	h
i Blowing in the Wind	35 L Tolstoy	i
j The Haywain	36 L da Vinci	j
k Under Milk Wood	37 A Vivaldi	k
l Sunflowers	38 A L Webber	l
m Romeo and Juliet	39 H G Wells	m
n Pomp and Circumstance	40 W Wordsworth	n

Sections of this questionnaire are based upon and derived from the earlier work of others and grateful acknowledgement is offered to:

H J Eysenck (Personality/Aesthetics)  
C T Fitz-Gibbon & P B Tymms (Performance Indicators)  
A Maslow (Self Actualization)  
L Hudson (Intra/Extrovert)  
R J Sternberg (Creative Personality)

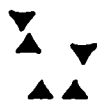
and the many teachers who were surveyed as the basis for this classroom analysis.

John Oxlee November 1990

# PATTERN PREFERENCE

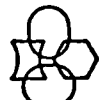
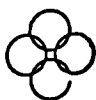
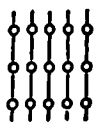
D. E. Berlyne

low-complexity categories



A irregularity of arrangement

B amount of material



C heterogeneity of elements

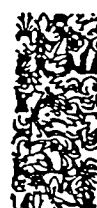
D irregularity of material

high-complexity categories



E incongruity

XA number of independent units



XB asymmetry

XC random redistribution

Figure 1. (From Berlyne, Borsa, Craw, Gelman and Mandell, 1965)

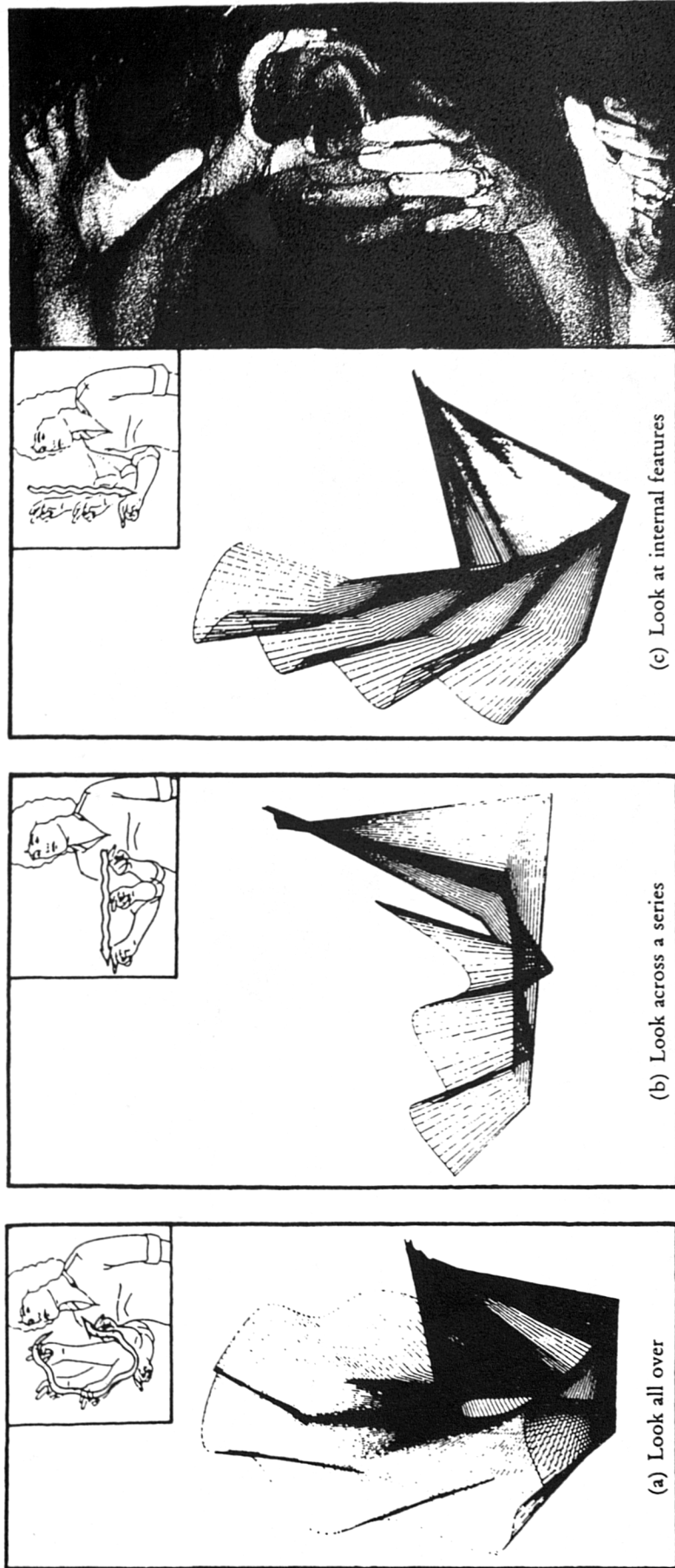


Figure 2. Computer-generated images showing three different grammatical inflections of the sign LOOK. The beauty of a spatial grammar, with its complex three-dimensional trajectories, is well brought out by this technique (see footnote, p. 90). (Reprinted by permission from Ursula Bellugi, The Salk Institute for Biological Studies, La Jolla, California.)

Two of the tests, it will be noted, are of a 'perceptual' nature. In the Gestalt Completion Test, S is asked to say what the figures, as in Diagram 7, would be when completed. His speed of responding is slower if he is higher on U.I. 17 presumably because he is more cautious than low U.I. 17 persons in coming to a conclusion. In the second perceptual test S is given an 'unstructured drawing', as in Diagram 8, and asked to say what objects he sees in it. The high U.I. 17 individual sees a higher proportion of objects which can be called threatening, e.g. daggers, lightning, tornadoes, pistols.

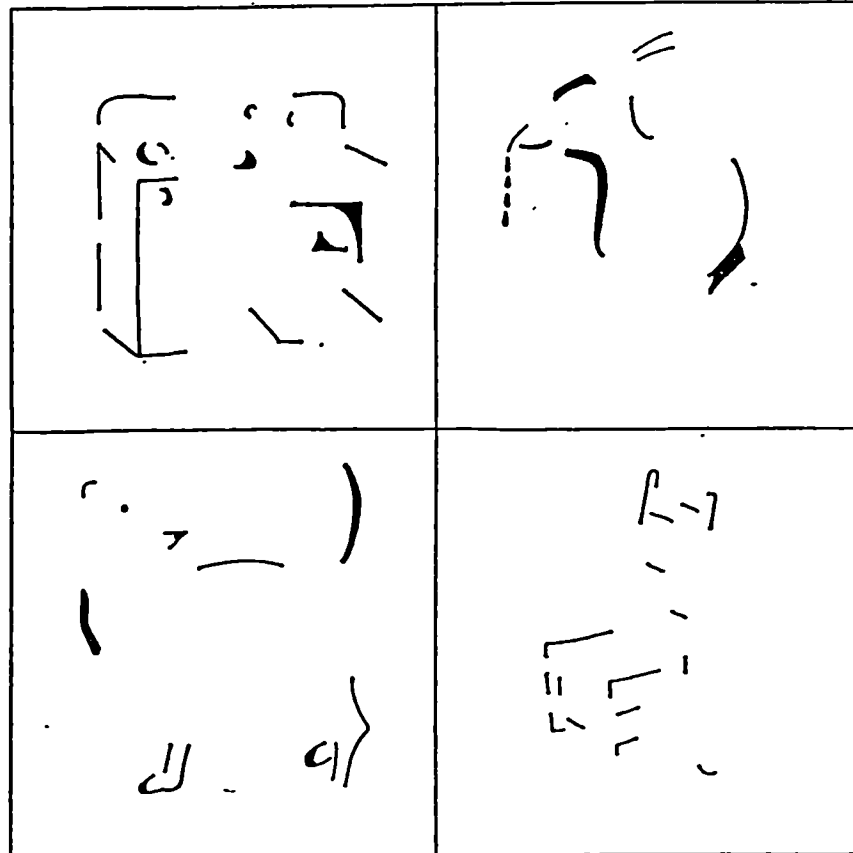


Diagram 7. Example of Gestalt Completion Test

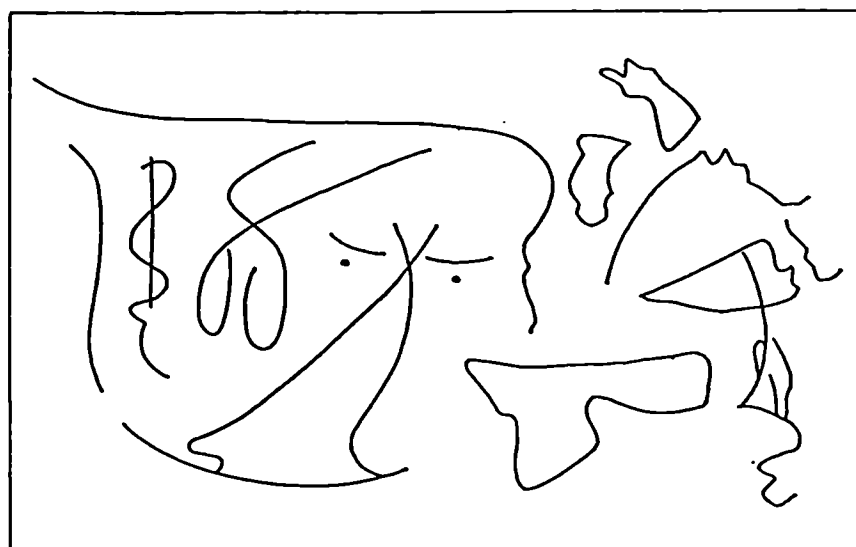


Diagram 8. Example of unstructured drawings test

# INDIVIDUAL STUDENT CREATIVITY PROFILE:

STUDENT	Name					Age	Sex	OVERALL %							
	Type	Art School	6th Form	Secondary	Mature	NonART									
SocEcoStat	Parental Occupation Points														
Av O Grade	No. of Subjects		Total Points		Aver.										
HOBBIES	Score														
ART MOTIVE	Total Score														
CREATIVITY FACTORS	Flu	Flex	Sens	Orig	Imag	Motiv	Total								
	Score														
TEACHING STYLE	Authoritarian		Democratic		Non-intervention										
	Info Process		Prob Solv		Inter-Activ										
TEACHING METHODS	P	D	PT	OD	TG	IS	PI	L	S	C	SA	CE	DT	IA	Best
ART LESSONS	Typical		Worst		Best										
STUDENT TYPE	As		IW		SW		QC								
RESPONSES TO ART	Simp. Rank		Unexp. Prefs.			Comments	Anal/Obj.	Aff/Subj.							
ART PREFERENCES	No. of Artists		Range	Nar.	Av.	Wide	No. of Unusual								
	Favourite Artist		Choice	Unus.	Freq.	Reas	Subj.	Obj.							
	Favourite "ism"		Choice	Unus	Freq.	Reas	Subj.	Obj.							
	Priority of Art Aspects	1	2	3	4	5									
	Is Purpose of Art related to own Aims														
	Outside influences on own Work														
	Ranking	1	2	3	4	5	6	Type C R N							
PATTERN PREFERENCES	Preference for Complex/Assymetric				Score										
SHAPE RECOGNITION	Score														
ORIGINALITY	L1	Score	%	L2	Score	%	L3	Score	%	Bonus	Total				
SPATIAL TESTS	Score														
SELF ASSESSMENT	Confidence	Traits	Cogn. St.	Proc. St.	Person.	Total									
	Score %	Sc. %	Sc. %	Sc. %	Sc. %										
SELF ACTUALIZAT	Aims	Score %	Character	Score %	Total Score										
PERSONAL QUALITIES	Divergent Thinking Score														
CULTURAL QUIZ	Art	Music	Lit.	Media	Total										
MEANS		for AGE		for SEX		for TYPE		for CONTROL							
Above															
Below															

# TEST OF SIGNIFICANCE FOR A SERIES OF STATISTICAL TESTS

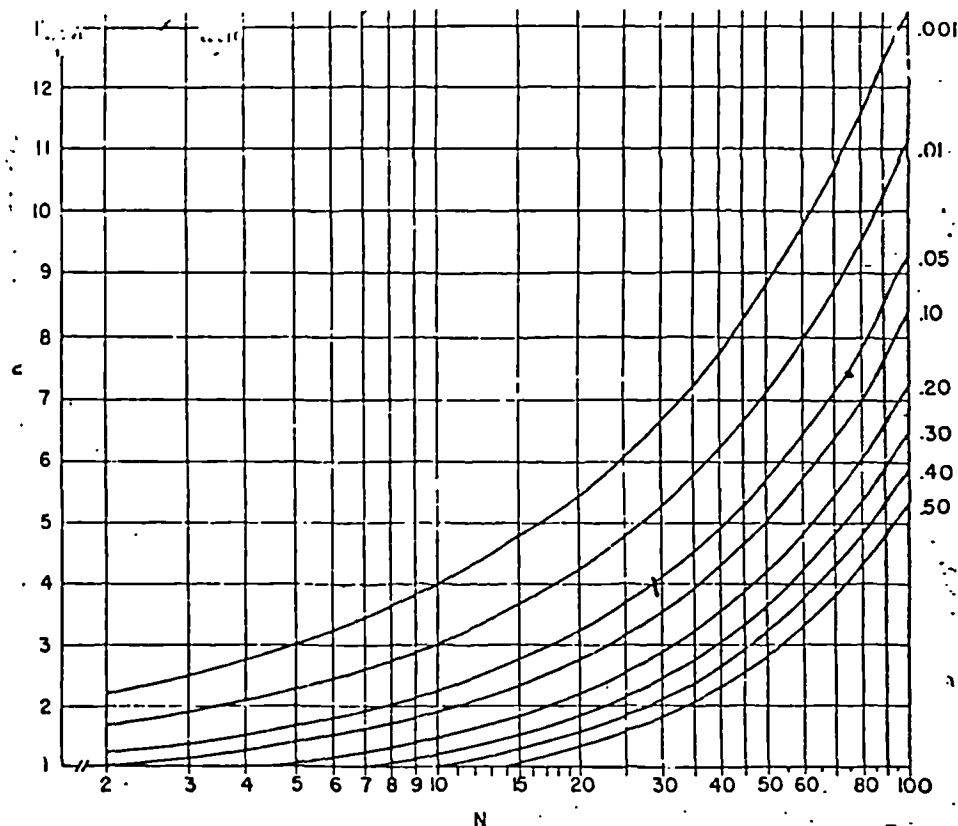
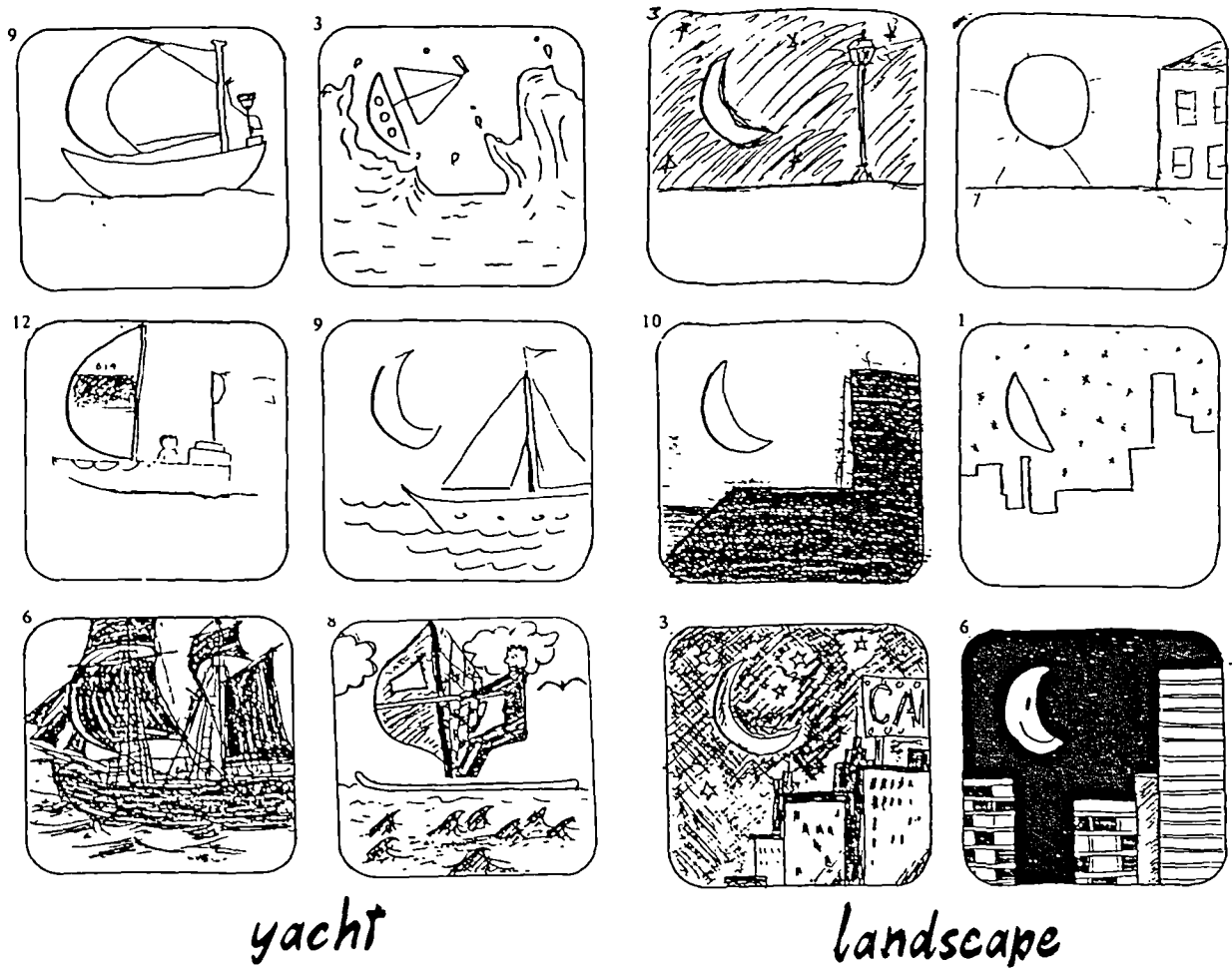
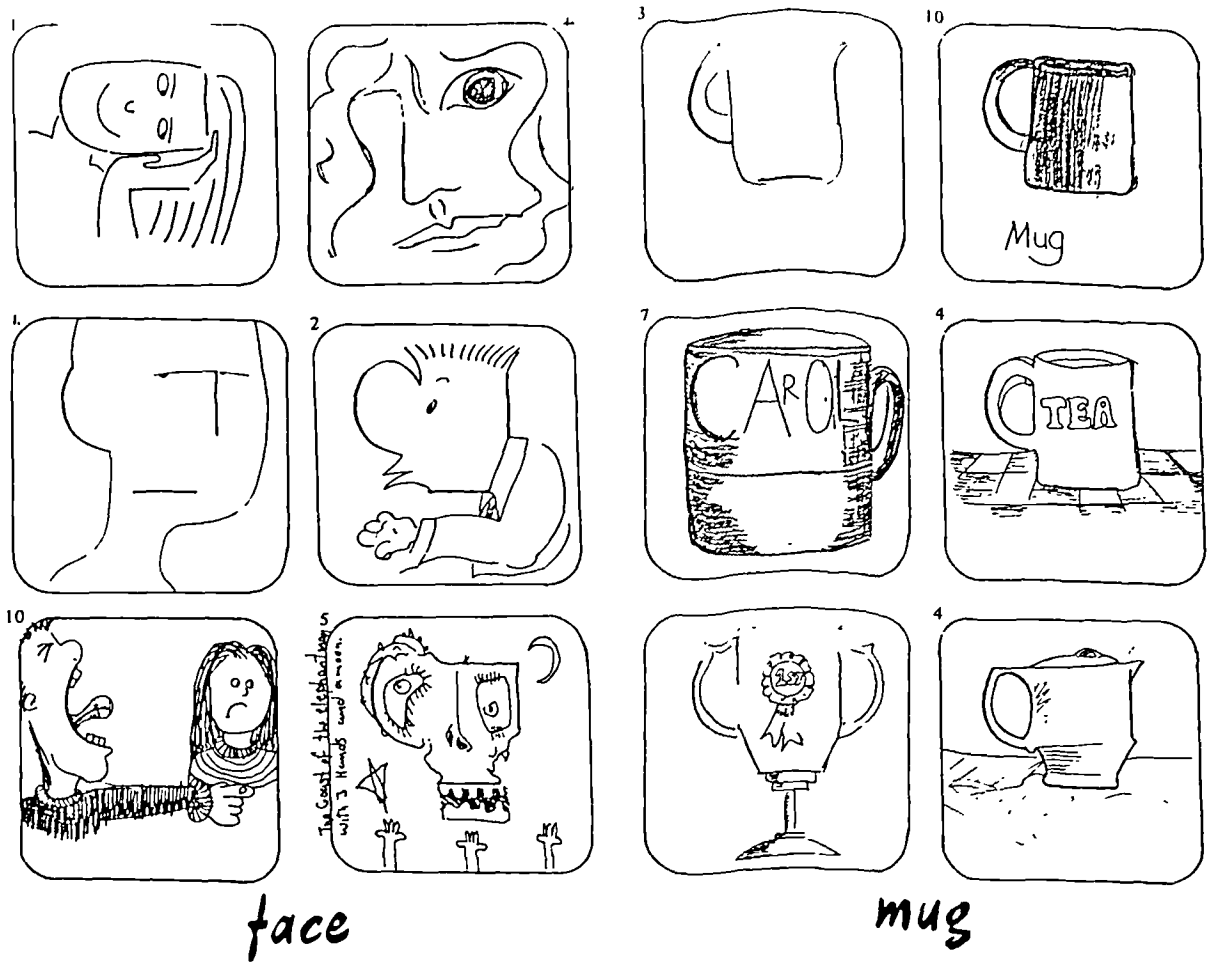
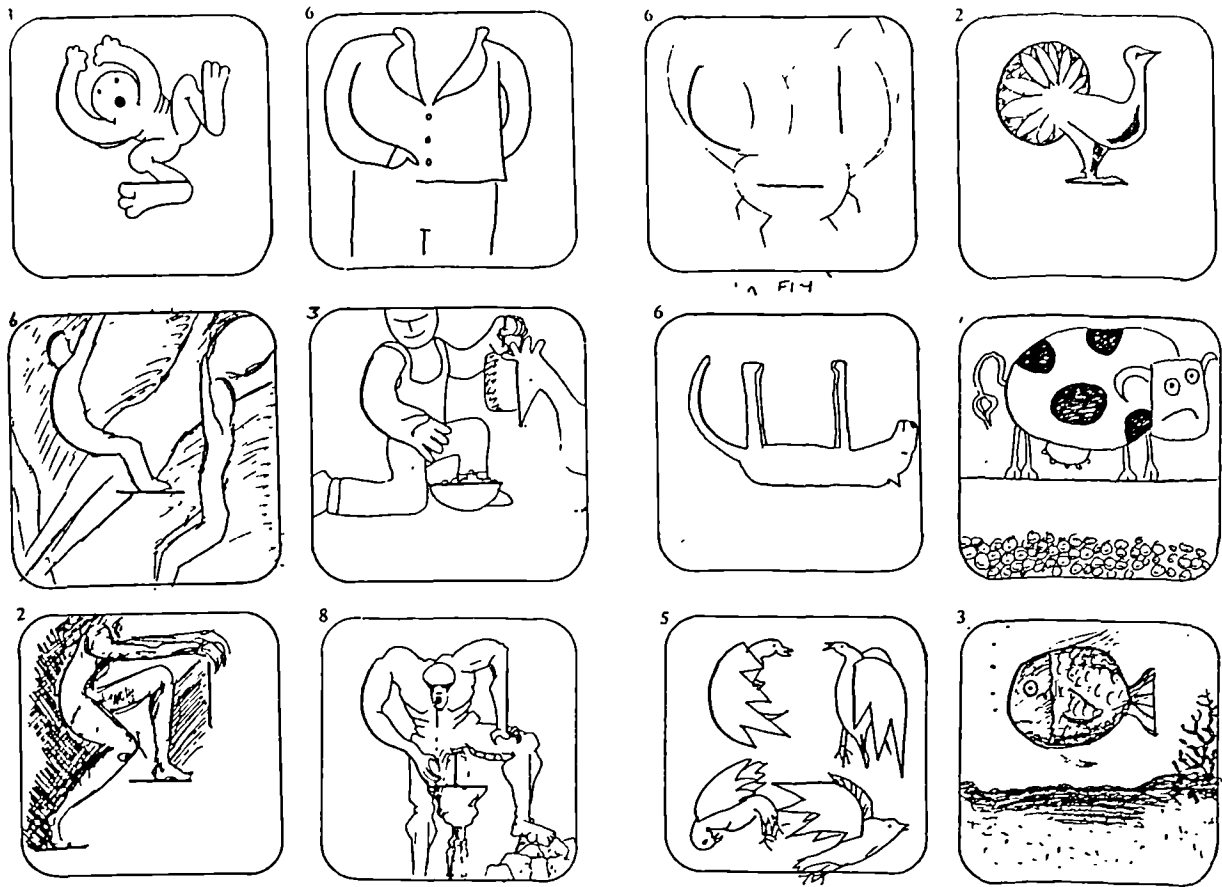


FIG. 1. CHANCE PROBABILITY OF OBTAINING AT LEAST  $n$  STATISTICS SIGNIFICANT AT THE .05 LEVEL FROM  $N$  CALCULATED STATISTICS

The chance probability of obtaining at least  $n$  out of  $N$  statistics can be read off the graph for values between .001 and .50.  $N$  has been plotted on a logarithmic scale, and this fact should be taken into account in interpolating for values of  $N$ . For example, for  $n = 7$ ,  $N = 60$ , and  $p = .05$  chance probability can be read from Fig. 1 as lying between .05 and .01. One would conclude that it is not probable that obtaining seven significant results out of 60 was due to chance alone. On the other hand, there is still the possibility that several of the seven significant statistics might have occurred by chance alone.

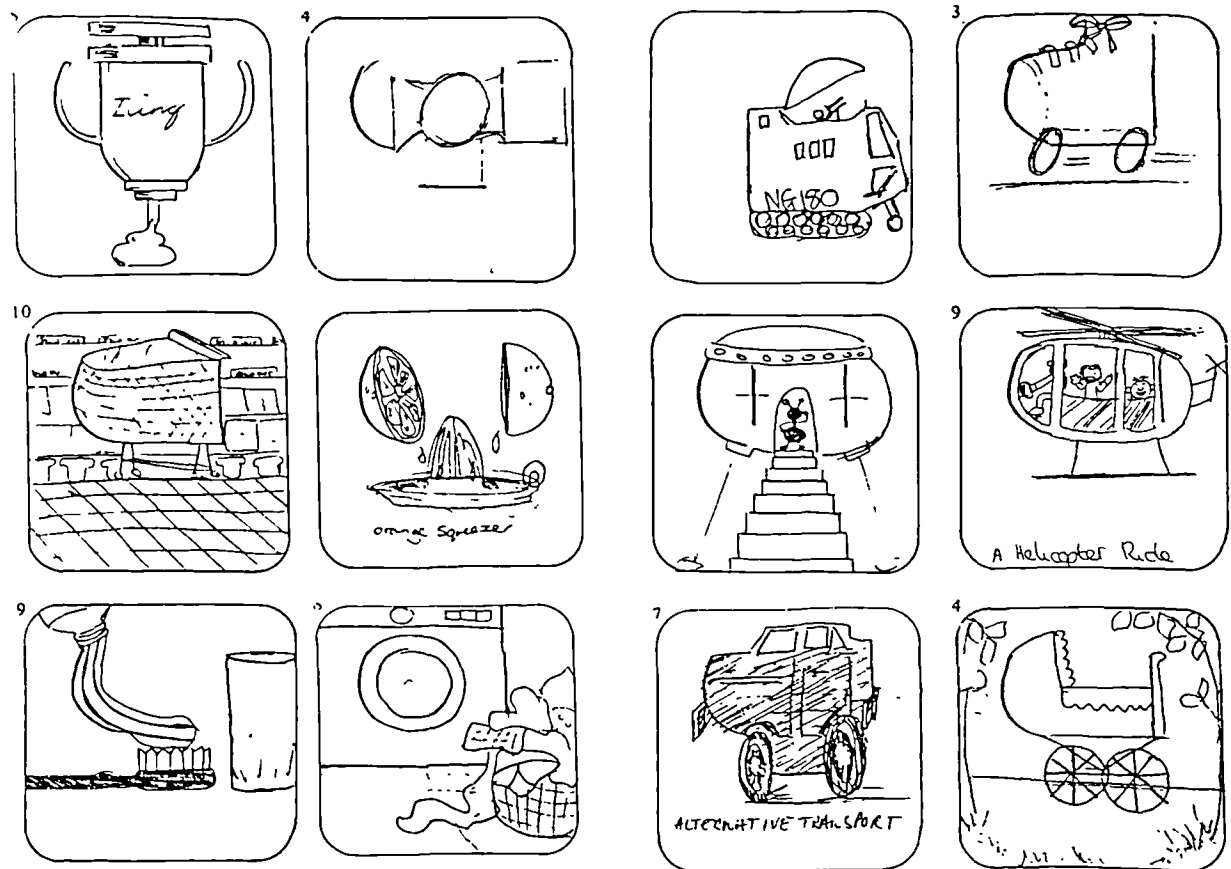






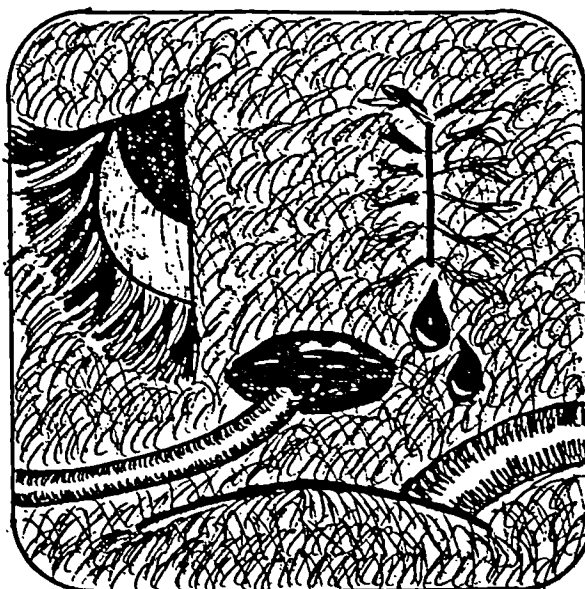
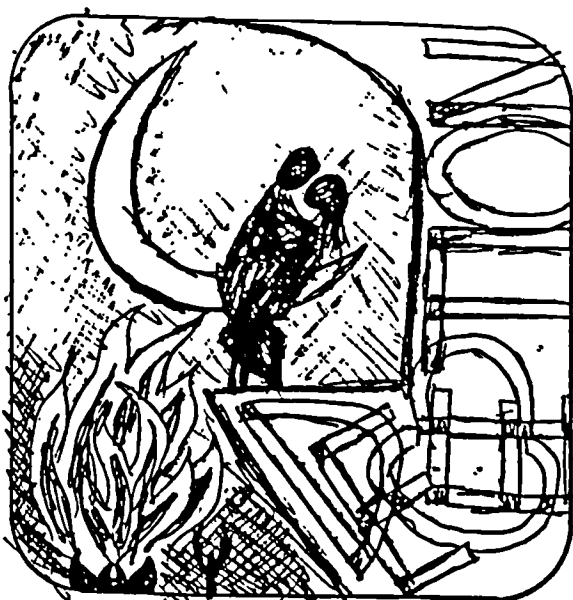
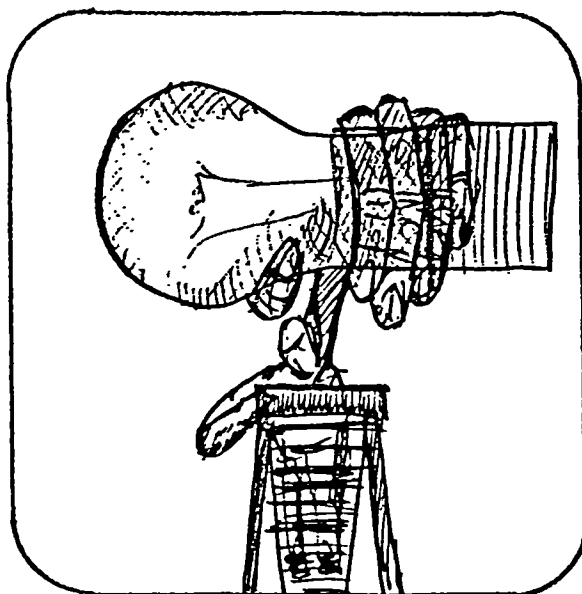
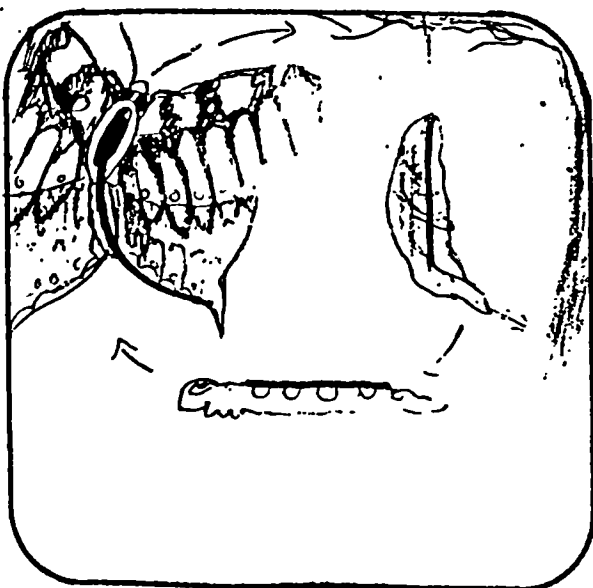
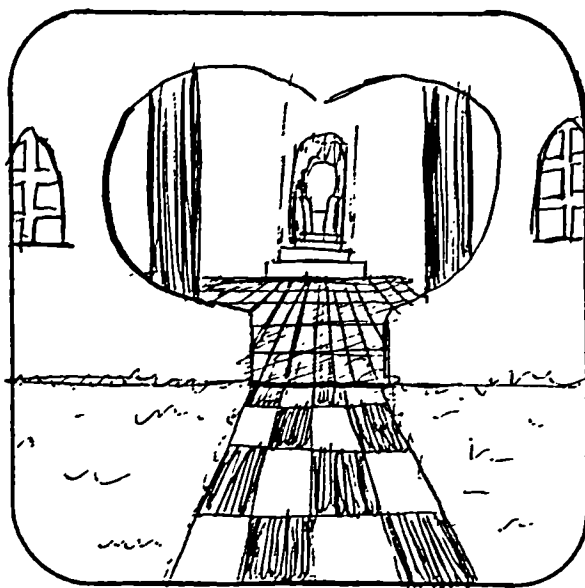
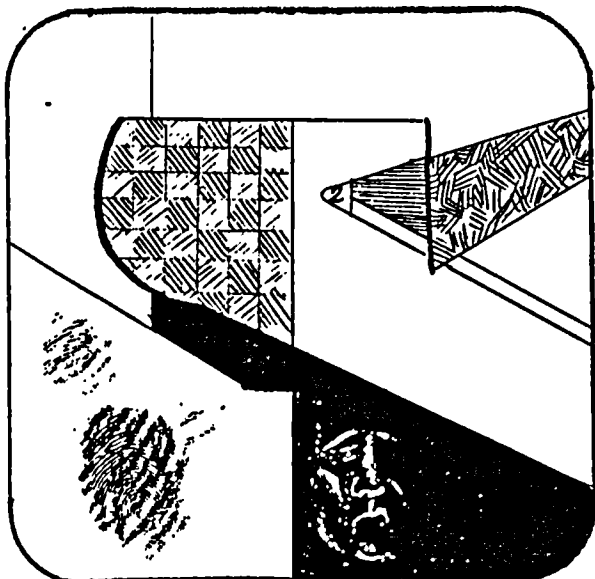
**FIGURES**

**ANIMALS**

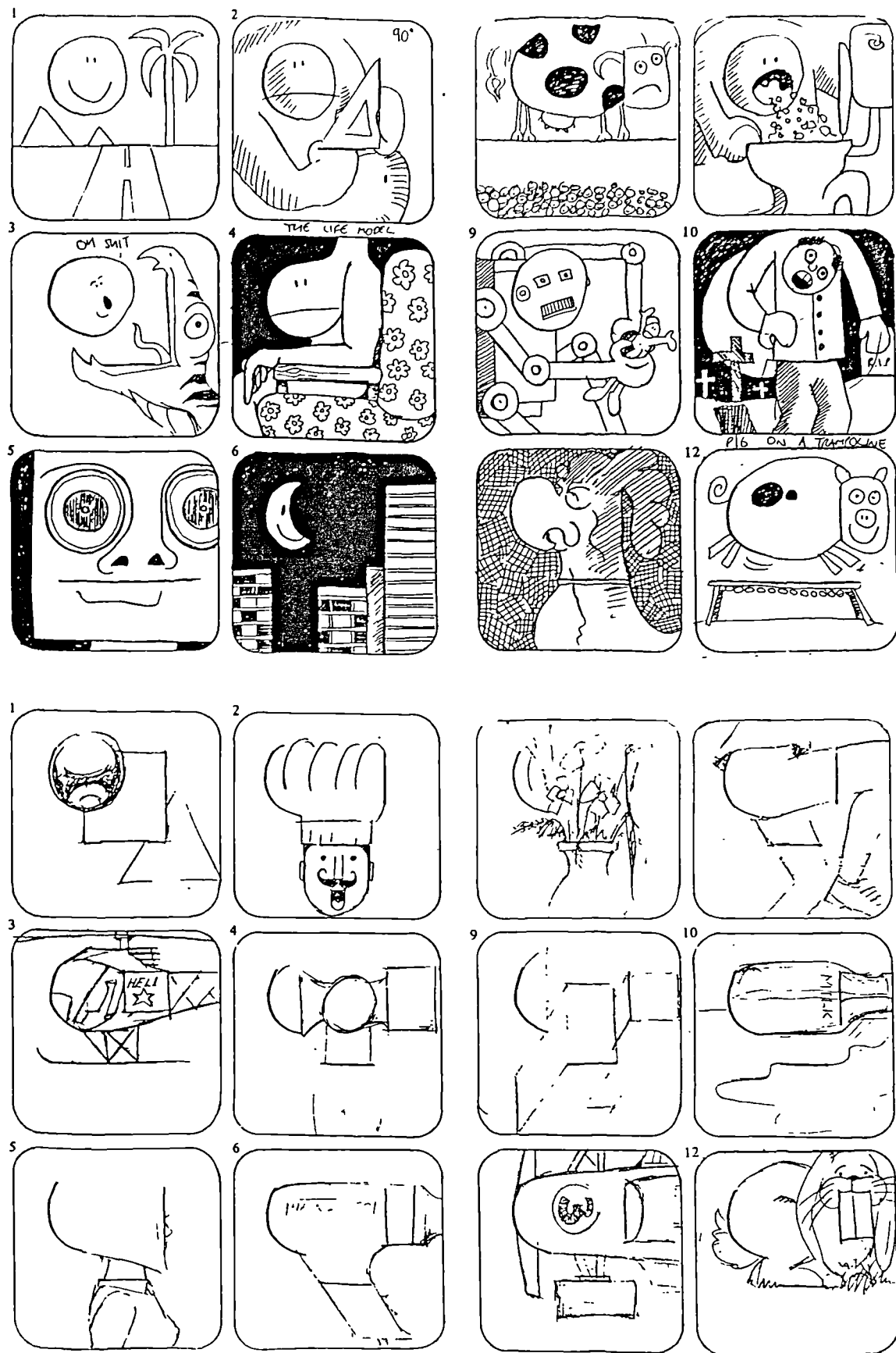


**UTENSILS**

**TRANSPORT**



EXAMPLES OF SET ACTUAL SIZE



EXAMPLES OF 2 COMPLETE SETS

UNIVERSITY OF  
NEWCASTLE UPON TYNE



School of Education

# VISUAL ARTS

## QUESTIONNAIRE FOR TEACHERS

If you feel your answers need explaining or qualifying, please feel free to write comments anywhere on the questionnaire. Should you prefer not to answer some of the questions, please just leave these blank. The answers you give will be treated STRICTLY CONFIDENTIALLY and will simply be used in statistical analyses at the university

### PERSONAL DETAILS

NAME					SEX	
AGE GROUP	20+	30+	40+	50+		
PRESENT POSITION						
SCHOOL/COLLEGE						
ADDRESS						
TELEPHONE						
QUALIFICATIONS & TRAINING						DATES
RANGE OF YOUR INTERESTS IN THE ARTS						
OUTSIDE INTERESTS						

List 10 famous artists you know, in the order they came into your head	1	6
	2	7
	3	8
	4	9
	5	10

Do you have a favourite artist?	
What, in particular, attracted you to his work?	

Do you have a favourite art 'movement' or 'ism'?	
What interests you especially about them?	

What do you think is the primary purpose of 'Art'?	
--	--

List the following aspects of Art in your personal order of priority  If you are not happy with these words, please add or use your own	COMPOSITION	1
	COLOUR	2
	EMOTION	3
	FORM	4
	RELATIONSHIP	5

What are you trying to achieve in your own work?	
--	--

Who or what do you think is the major influence on your personal work?	
How has this influence shown itself in your work?	

DESCRIBE, IN YOUR OWN WORDS, A TYPICAL ART LESSON

DESCRIBE, IN YOUR OWN WORDS, THE TYPE OF LESSON WHICH PRODUCED YOUR MOST ORIGINAL AND IMAGINATIVE WORK

DESCRIBE, IN YOUR OWN WORDS, THE WORST ART LESSON YOU EVER HAD

## YOUR TEACHING

Which of these categories best fits your work?

AU Gives instructions, has fixed ideas	
DE Prepared to discuss issues/opinions	
NI Values pupil contribution and free expression	

What do you think is the main aim in your Art lessons?

The giving of information/facts/knowledge/opinions	
Introducing problems and showing pupils how to solve them	
Discussion topics/ideas with pupils to develop their abilities	

Which of these descriptions is closest to your normal or preferred Teaching Style?

IM Working one to one with individual pupils	
CE Conducting question and answer sessions with whole class	
GI Dividing class into small groups and teaching each in turn	
RC Regular changes from group to individual instruction	
IC Changing your style in response to feedback	

Educationalists recognize four main types of student, which group would you think would be most successful in Art?

AS Works steadily but likes to move about the room Values the approval of the teacher Responds to rather than initiates ideas	
IW Works steadily but is easily distracted Avoids contact with teacher where possible Initiates discussions with other peers	
SW Content to work alone Needs little teacher or peer contact Appears passive but is independent and determined	
QC Works steadily but prefers group activities Relies heavily on teacher support and approval	

Please answer the following questions by ticking the appropriate column

- A Which of these modes of instruction are used by you?  
B Which do you use most frequently?  
C Which produces the most original/imaginative work from your pupils?

	A	B	C
PROJECTS: individual or group work explored/extended/researched outside the classroom			
DRILL/REPETITION: memorizing facts/information by repetition			
PEER TUTORING: one to one teaching by pupil to pupil			
OPEN DISCUSSION: group exchanging/debating ideas and opinions			
TEACHING GAMES: play, controlled by teacher to develop learning skills, eg memory, listening, concentration			
INDEPENDENT STUDY: working without teacher intervention			
MEDIA BASED PROGRAMMED INSTRUCTION: audio visual teaching package			
LECTURE: formal oration by teacher to passive group			
SIMULATION: model or analogy of 'real' situation for pupil participation			
COUNSELLING: listening/questioning/advising in a caring situation			
SELF ASSESSMENT AWARENESS: constructive self analysis/criticism of own achievements			
CRITICAL EVALUATION: relating work to given criteria or values, learning to discriminate			
DRAMA TECHNIQUES: exploring attitudes/issues through role play and dramatic improvisation			
OPEN INTERACTIVE LEARNING: negotiation between pupils and teacher about the organisation and processes of learning			

# TEACHERS' DESCRIPTIONS OF ART LESSONS

*"Describe in your own words the type of lesson which produced the most original and imaginative work from your students."*

B. Sec 40 M

"A starting point with good visual or imaginative stimulus, but providing an open-ended situation."

D. Sec 30 M

"....look at some visual stimulus, then develop a theme."

F. Sec 40 F

"Setting a project, then using visual stimulus to enhance it."

G. Sec 30 M

"Introduce the stimulus, and then discussing the good responses."

H. Sec 30 M

"....introduce an idea as stimulus."

I. Sec 30 F

"....show a visual stimulus to get a response, then discuss any technical details."

K. Sec 30 F

"....teacher input, then the pupils follow individual programmes."

R. Sec 30 M

"Introducing a new and imaginative type of project with role-play and real-life examples, then a painting done quickly with free expression."

J. 6F 40 F

"....getting students to look at a theme or stimulus in an entirely novel way."

T. 6F 40 M

"Independent development of a student's own concerns, in response to projects initially set by staff."

P. HE 40 F

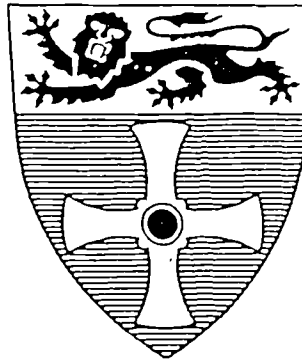
"Visual information is shown. A dialogue with an idea is established, evaluated, and discussed."

S. HE 50 M

"Begin by looking at a visual stimulus, then extend ideas."



UNIVERSITY OF  
NEWCASTLE UPON TYNE



School of Education

# IMAGINATIVE DRAWING TESTS

These tests have been devised by the University of Newcastle to measure the imaginative and creative abilities of secondary pupils.

You should have been given an Answer Sheet and a Test Booklet. Please put your name and school on the Answer Sheet now.

You will be asked to complete 10 drawings, each on a different theme.

For each drawing you will be allowed 3 minutes and you may use pencil, felt tip or ballpoint pen.

We want you to use your imagination as much as possible, and produce original ideas which in your own opinion best illustrate the themes.

For each theme you will be given material as a stimulus to help your thoughts. These stimuli will be in the form of Drawings/Photographs/Music/Stories/Songs.

It is important that you do NOT look at the next set of stimulus until you are told.

Remember these are tests of imagination and originality, they are NOT tests of your drawing skills or artistic ability.

You may give titles to your drawings or write comments in the margins.

Thank you for taking part.

John Oxlee



School of Education  
IMAGINATIVE  
DRAWING  
TESTS

# ANSWER SHEET

Name		School									
1	1	2	3	4	5	6	7	8	9	10	Tot.
2											
3											
4											
5											
6											
7											
8											
9											
10											
Total											

Drawing  
1

Drawing  
2

Drawing  
3

Drawing  
4

Drawing  
8

Drawing  
9

Drawing  
10

# TEST GROUP STIMULUS

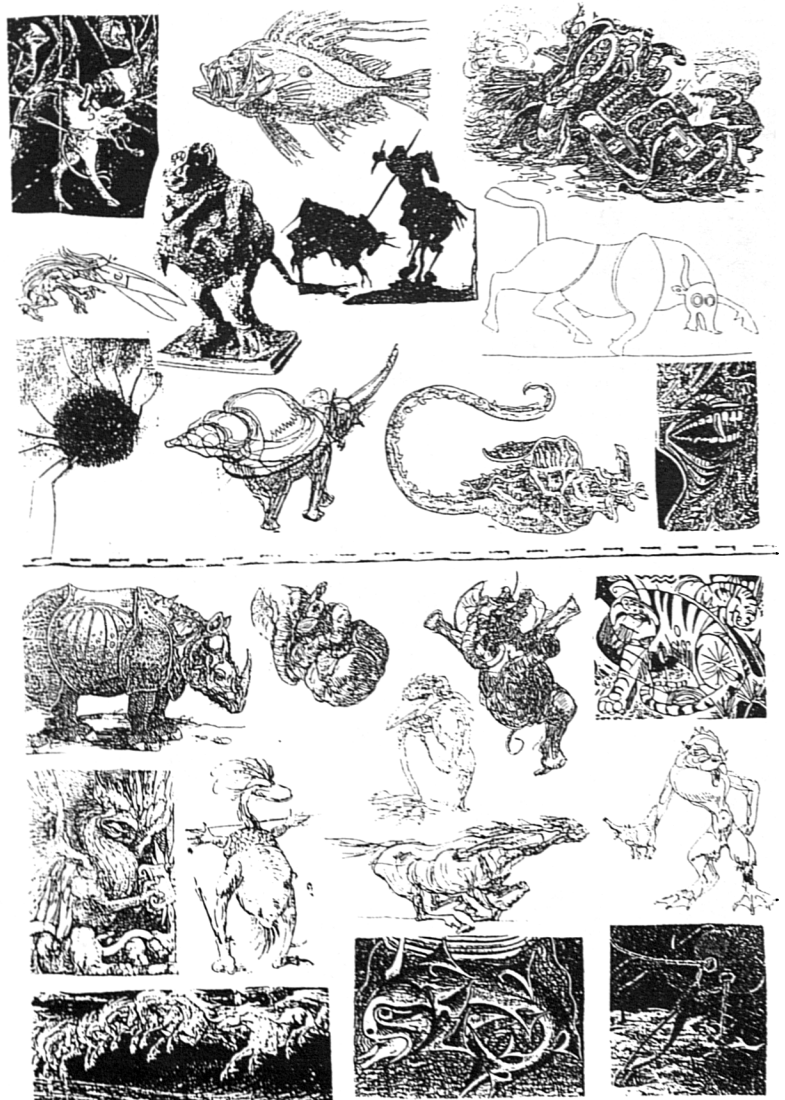
## Drawing 1 FANTASTIC CREATURES

No Stimulus

Imagine you are an Astronaut,  
and your spaceship has landed  
on an unknown planet in another  
Galaxy.

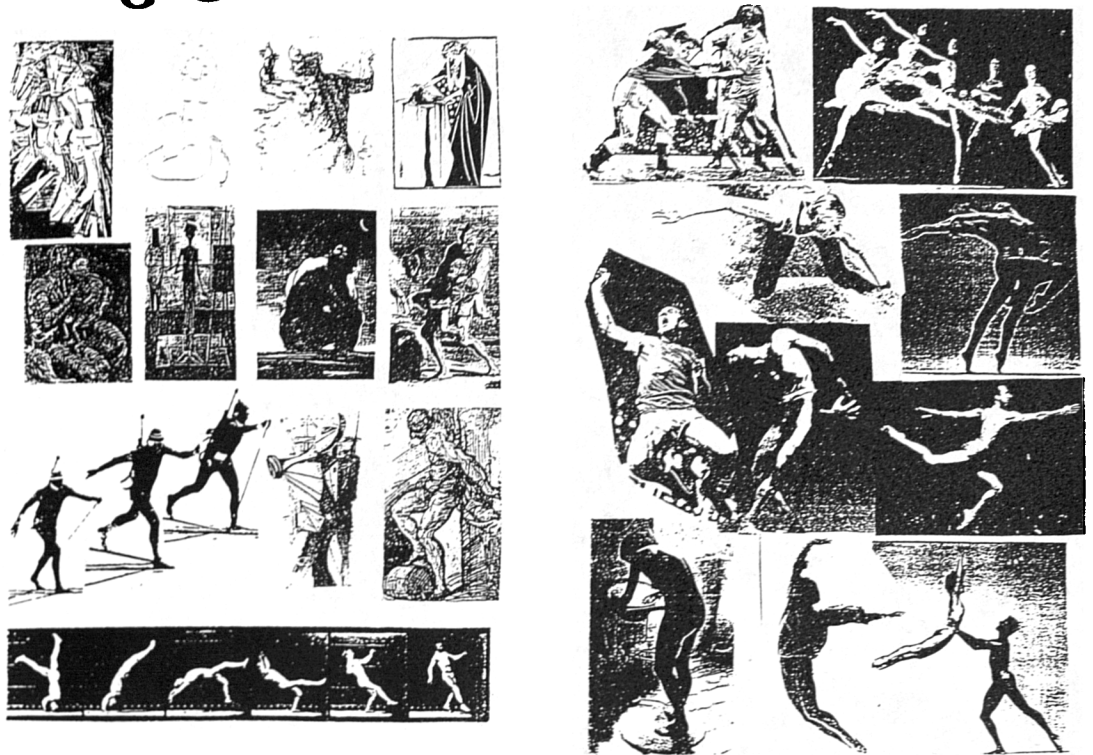
What sort of fantastic creatures  
do you think you might see ?

## Drawing 2 FANTASTIC CREATURES



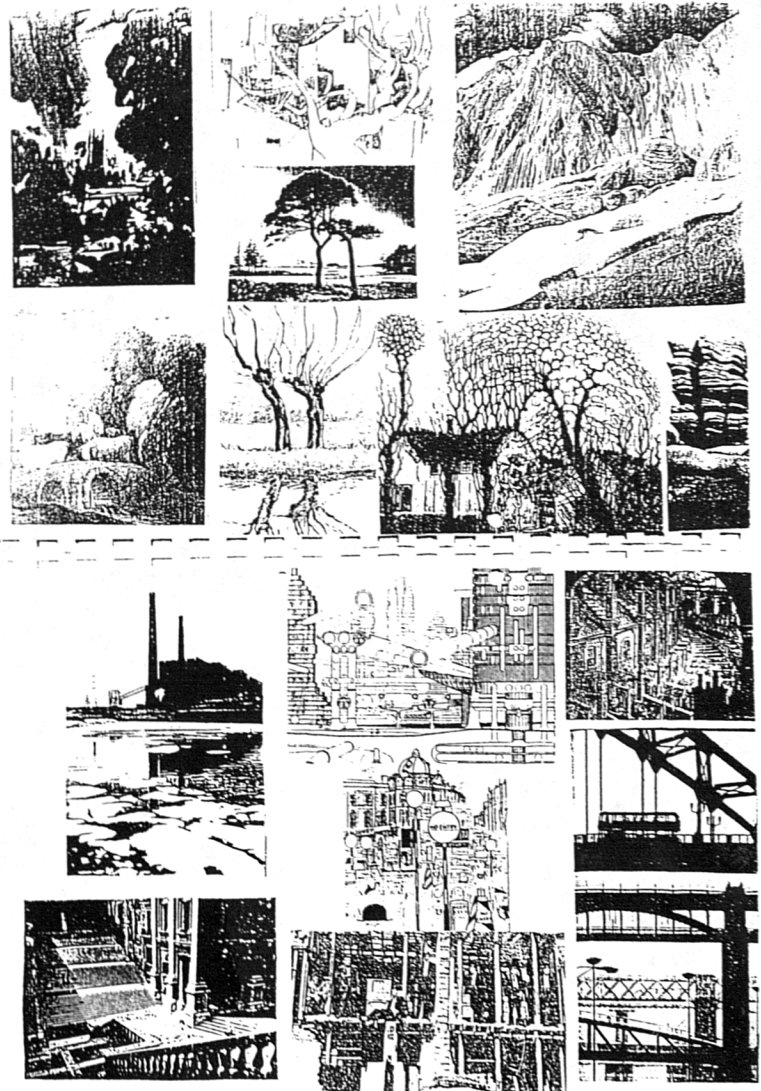
# Drawing 3

## FIGURES IN ACTION



# Drawing 4

## URBAN or RURAL LANDSCAPES



## Drawing 5

## WOLF CHILDREN

Spoken stimulus

## Drawing 6

1

You remember how, in a half-remembered dream,  
You found yourself in a long corridor,  
How behind the first door there was nothing,  
Nothing behind the second,  
Then how you swayed from room to empty room  
Until, behind that last half-open door  
You heard a telephone... and you were wakened  
By a woman's voice asking you to come  
To the Atlantic Club, between six and seven,  
And when you came, to come alone.

2

There was a river overhung with trees.  
The girls stood waist-deep in the river washing,  
And night still lingered underneath the eaves  
While on the bank young boys with lines were fishing.  
Mothers and daughters bowed beneath their sheaves  
While I sat drinking bitter coffee wishing -  
And the tide turned and brought me to my senses.  
The pleasant war brought the unpleasant answers:  
The villages are burnt, the cities void;  
The morning light has left the river view;  
The distant followers have been dismayed;  
And I'm afraid, reading this passage now,  
That everything I knew has been destroyed

3

In Flanders fields the poppies blow  
Between the crosses, row on row,  
That mark our place: and in the sky  
The larks, still bravely singing, fly  
Scarce heard amid the guns below  
We are the Dead. Short days ago  
We lived, felt dawn, saw sunset glow,  
Loved and were loved, and now we lie  
In Flanders fields

4

They shut the road through the woods  
Seventy years ago  
Weather and rain have undone it again  
And now you would never know  
There was once a road through the woods  
Yet, if you enter the woods  
Of a summer evening late  
When the night-air cools on the trout-ringed pools  
Where the otter whistles his mate  
You will hear the beat of a horse's feet  
and the swish of a skirt in the dew  
Steadily cantering through  
The misty solitudes  
As though they perfectly knew  
The old lost road through the woods  
But there is no road through the woods

## Drawing 7

### MUSIC STIMULUS

Listen to this piece of music,  
Draw whatever images come into  
your head while the music is  
playing.

# Drawing 8

## ODE TO BILLY JOE

It was the third of June, another sleepy dusty delta day.  
I was out chopping cotton and my brother was baling hay  
And at dinnertime we stopped and walked back to the house to eat  
And mamma hollered at the backdoor  
You all remember to wipe your feet

And then she said I got some news this morning from Choctaw Ridge  
Today Billy Joe McAllister jumped off the Tallahatchi Bridge.

And pappa said to mamma as he passed around the blackeyed peas  
Well Billy Joe never had a lick of sense  
Pass the biscuits please  
There's five more acres in the lower forty I've got to plough  
And mamma said it was a shame about Billy Joe anyhow.

Seems like nothing ever comes to no good up on Choctaw Ridge  
And now Billy Joe McAllister's jumped off the Tallahatchi Bridge

My brother said he recollected when he and Tom and Billy Joe  
Put a frog down my back at the Carol County Picture Show  
And wasn't I talking to him after church last Sunday night,  
I'll have another piece of apply pie,  
You know that don't seem right

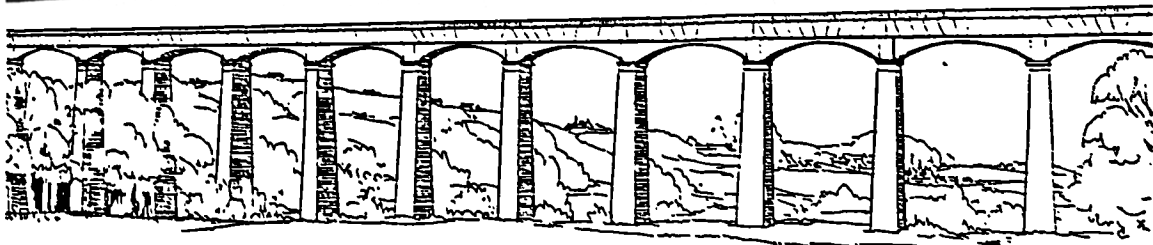
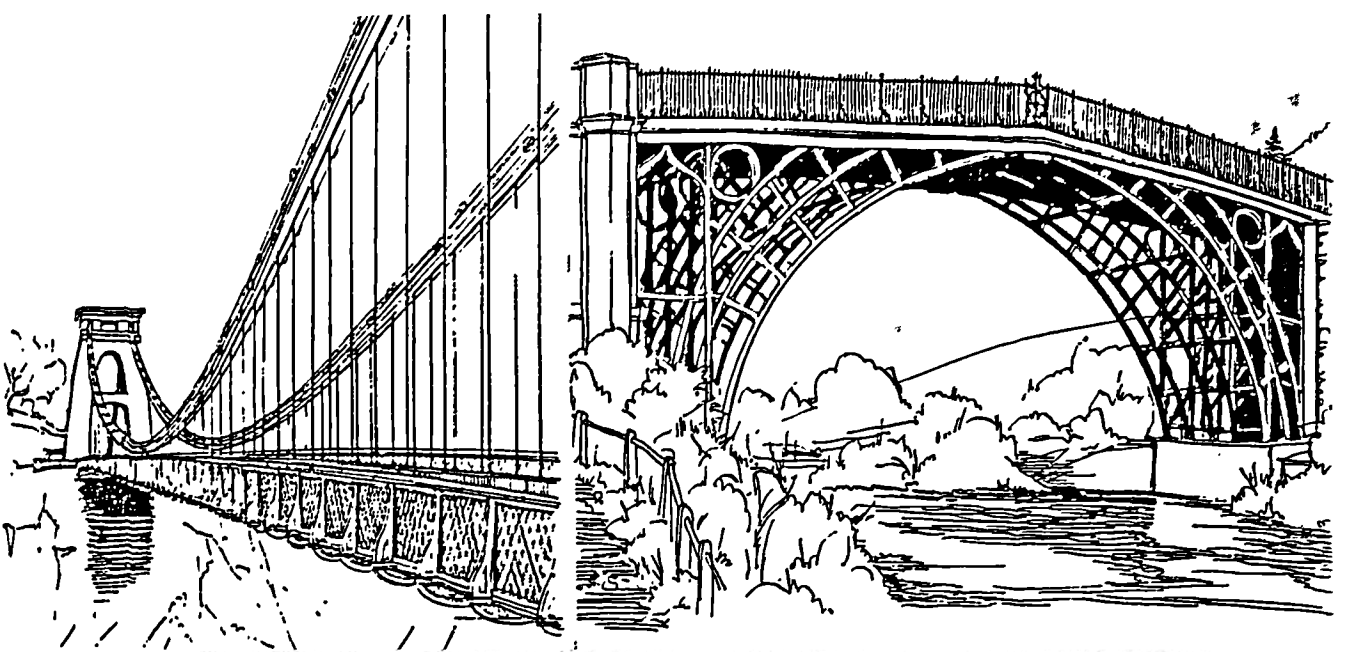
Why I saw him at the sawmill yesterday up on Choctaw Ridge  
And now you tell me Billy Joe's jumped off the Tallahatchi Bridge.

And mamma said to me, child what's happened to your appetite  
'cos I been cooking all morning and you haven't touched a single bite  
That nice young preacher, Brother Taylor, dropped by today  
Said he'd be pleased to have dinner on Sunday

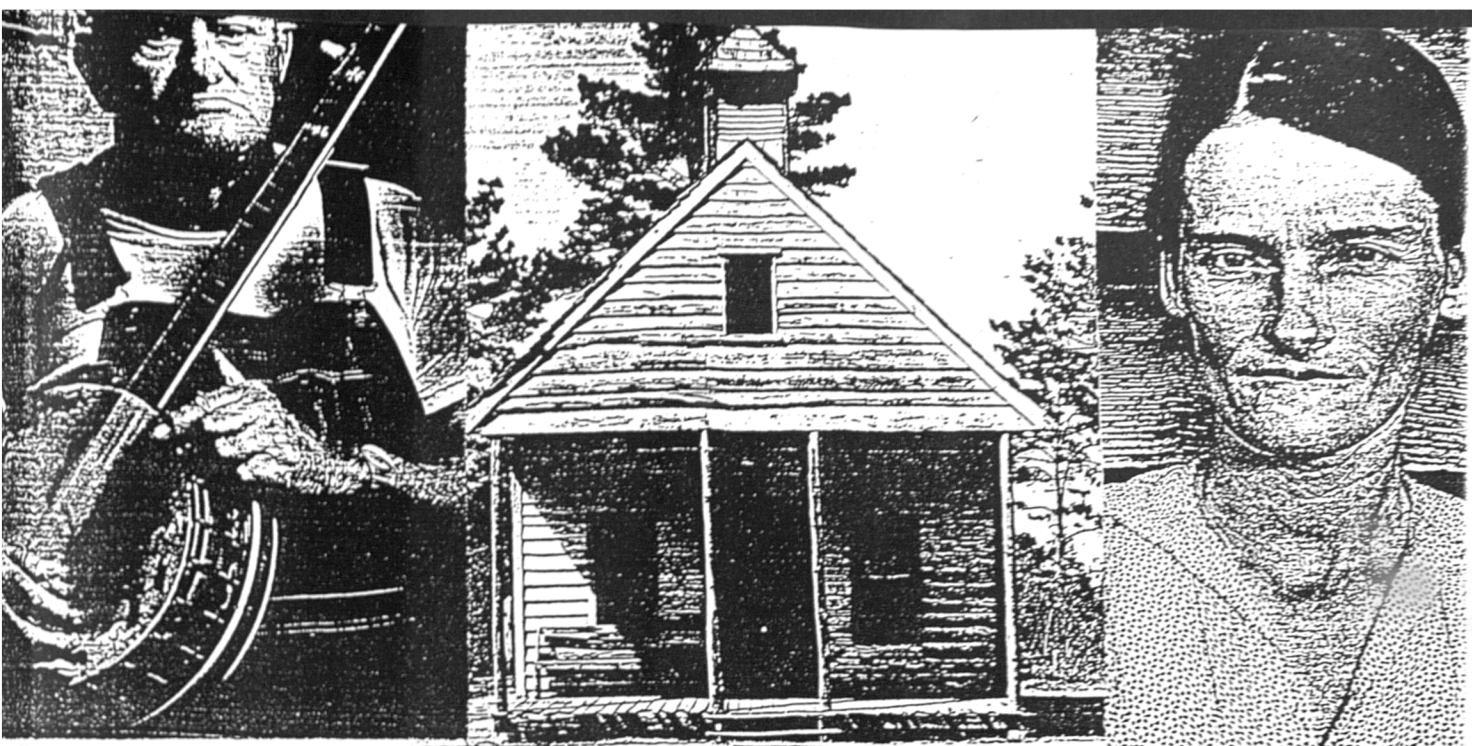
Oh, and by the way,  
He said he saw a girl who looked a lot like you  
Up on Choctaw Ridge  
And she and Billy Joe was throwing something  
Off the Tallahatchi Bridge.

A year has come and gone  
Since we heard the news 'bout Billy Joe  
Brother married Becky Thompson, they bought a store in Two Furlow  
There was a virus going round  
Pappy caught it and he died last spring

And now mamma doesn't seem to want to do much of anything  
And me, I spend a lot of time picking flowers up on Choctaw Ridge  
And dropping them into the muddy water off the Tallahatchi Bridge.





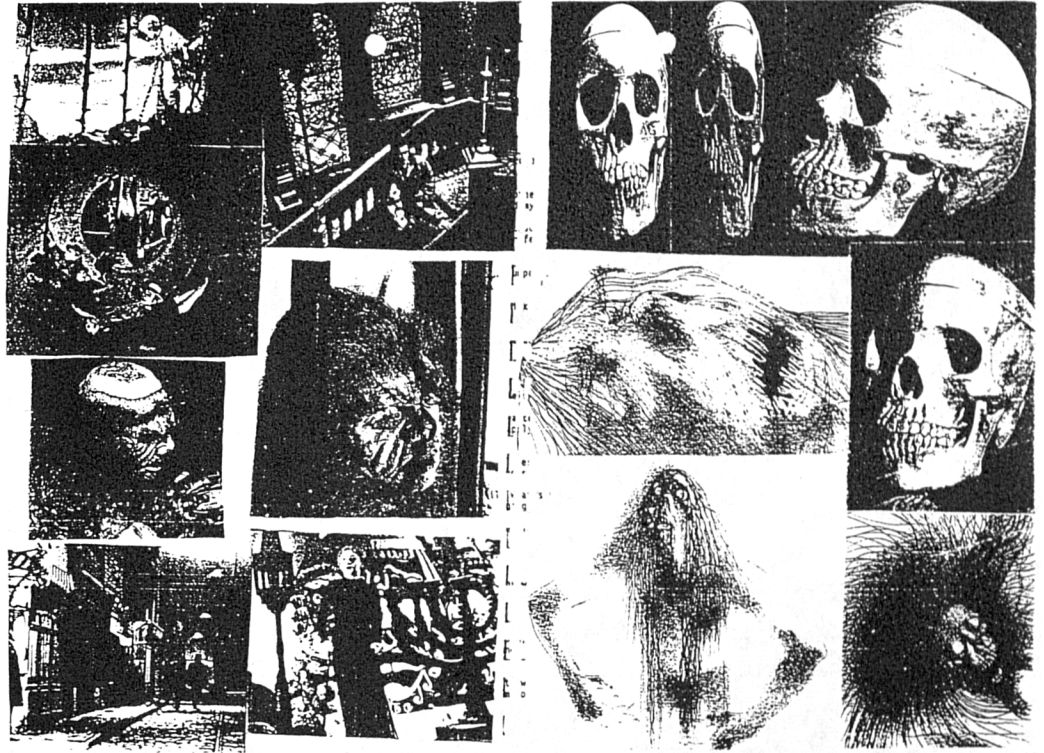


Appendix 5.6

## Drawing 9

## HAUNTED HOUSE

But only a host of phantom listeners  
That dwelt in the lone house then  
Stood listening in the quiet of the moonlight  
To that voice from the world of men:  
Stood thronging the faint moonbeams on the dark stair,  
That goes down to the empty hall,  
Hearkening in an air stirred and shaken  
By the lonely Traveller's call.  
And felt in his heart their strangeness,  
Their stillness answering his cry,  
Never the least stir made the listeners,  
Through every word he spoke  
Fell echoing through the shadowiness of the still house



## Drawing 10

## AZTECS

In the midst of all this splendour stood places of the greatest horror. The Aztecs believed that after the sun had sunk below the rim of the world, it had to struggle with the god of the night before it could reappear the following day. To ensure its victory and prevent eternal darkness overtaking the world, the sun had to be nourished with human blood. So every day men were taken up the pyramid steps to the temples. The priests, black-robed, their long hair matted with blood and stinking of decaying flesh, awaited them. Each victim was stretched over the sacrificial stone. The priest sliced open his chest with an obsidian knife and lifted the heart, still palpitating, up towards the sun. The demand for victims was never-ending. Some were men who had been sent as tribute by vassal states, others were prisoners taken in battle, and the Aztecs maintained a continuous stage of war with some of their neighbours to ensure that the supply never ceased. On important occasions, the scale of sacrifices was such that the queue of men waiting to be led up the pyramid steps to the temple stretched for over a mile through the city.



# CONTROL GROUP STIMULUS

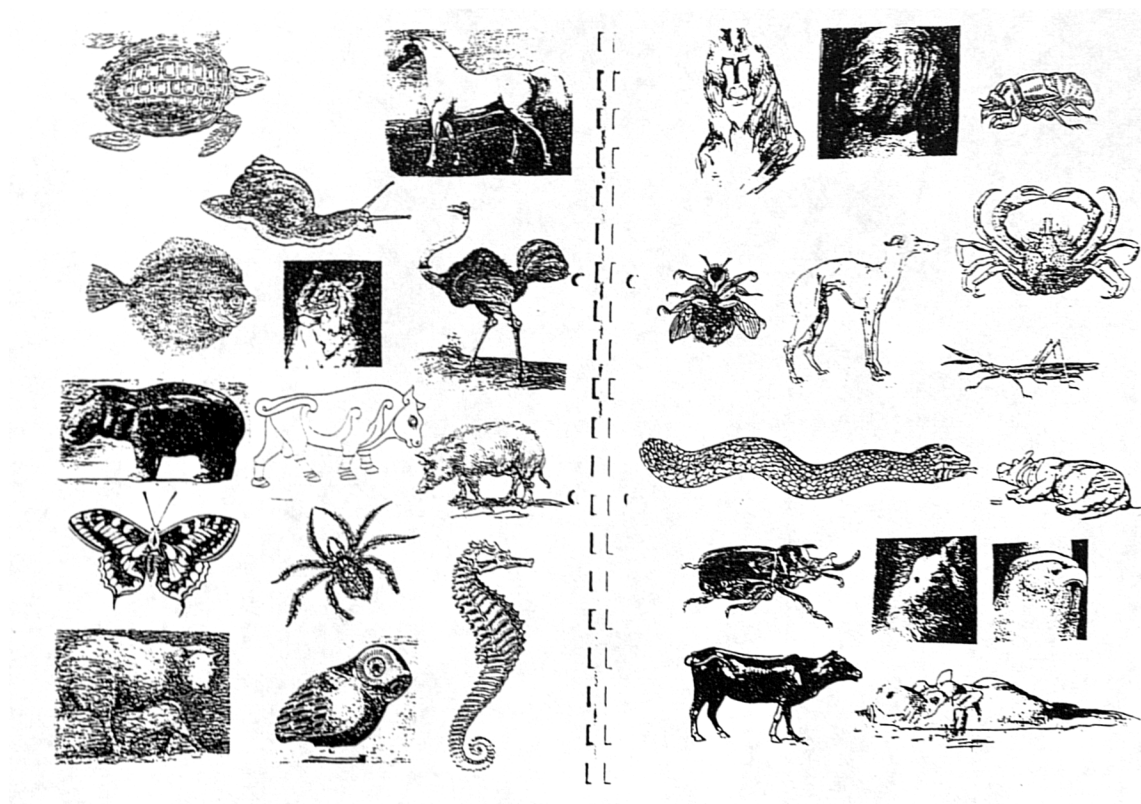
## Drawing 1 FANTASTIC CREATURES

No Stimulus

Imagine you are an Astronaut,  
and your spaceship has landed  
on an unknown planet in another  
Galaxy.

What sort of fantastic creatures  
do you think you might see ?

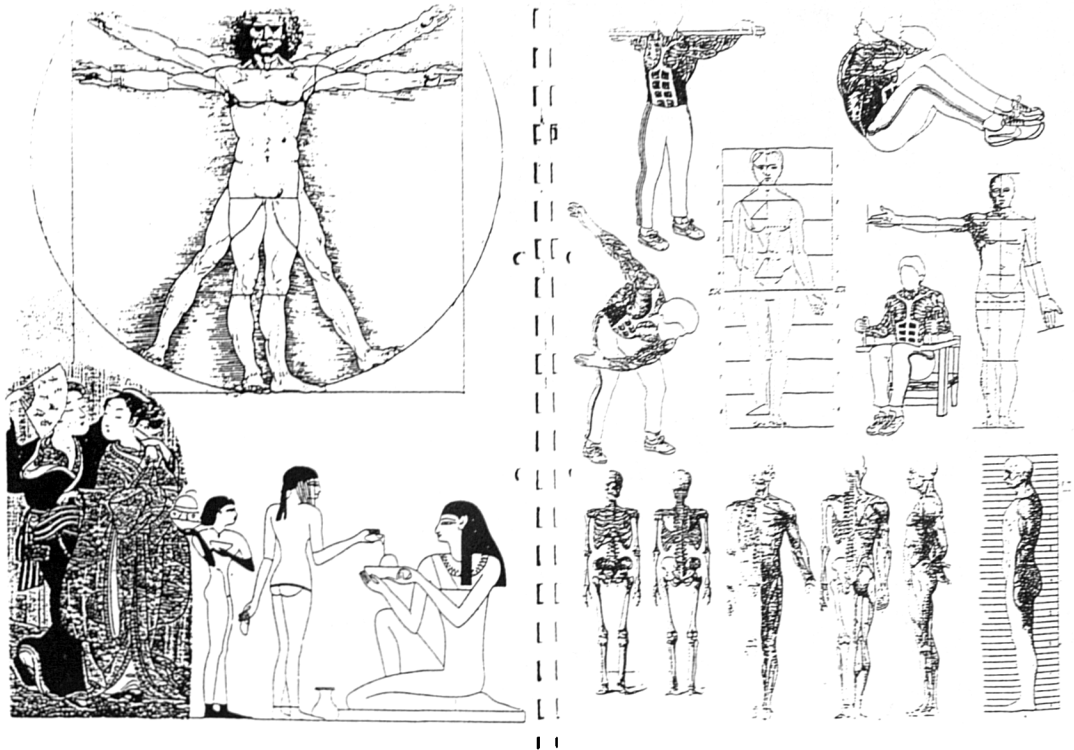
## Drawing 2





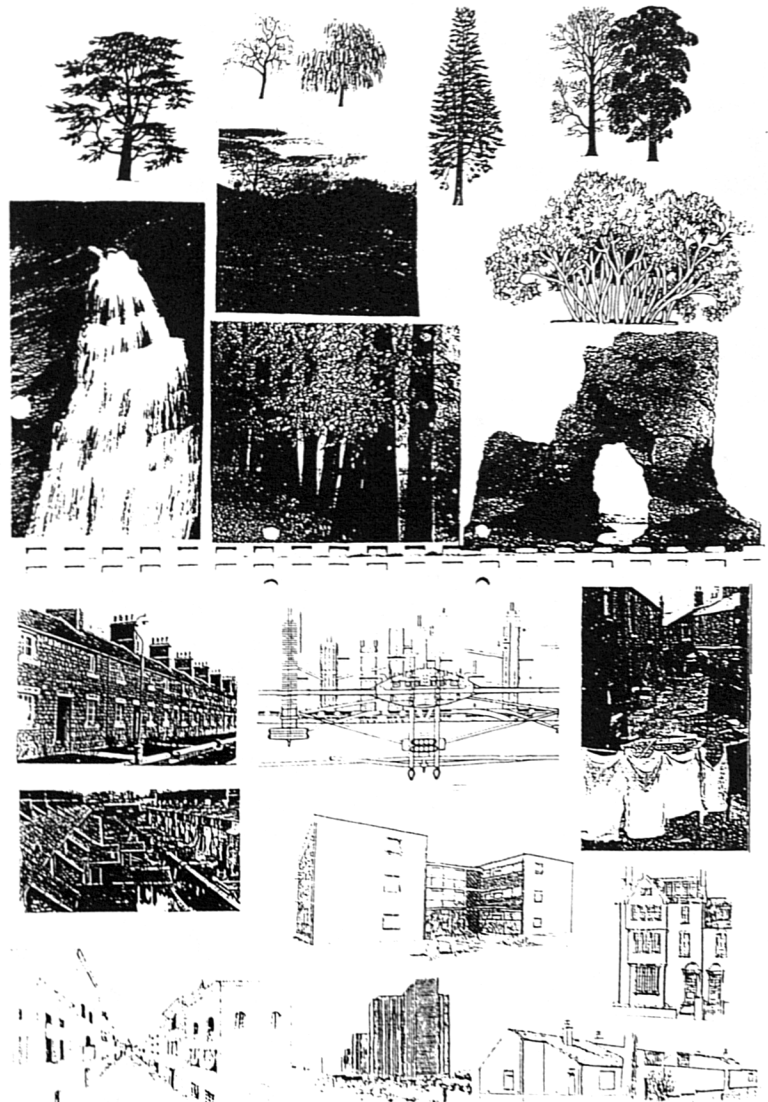
# Drawing 3

## FIGURES IN ACTION



# Drawing 4

## URBAN or RURAL LANDSCAPES



## Drawing 5      WOLF CHILDREN

Spoken stimulus

Drawing 6      Choose one of the Titles below for drawing 6 and produce your illustration of this idea.

- A      A Long Empty Corridor
- B      A Wartime Jungle River Village
- C      A Soldiers' Graveyard
- D      A Disused Road in a Misty Wood

## Drawing 7      MUSIC STIMULUS

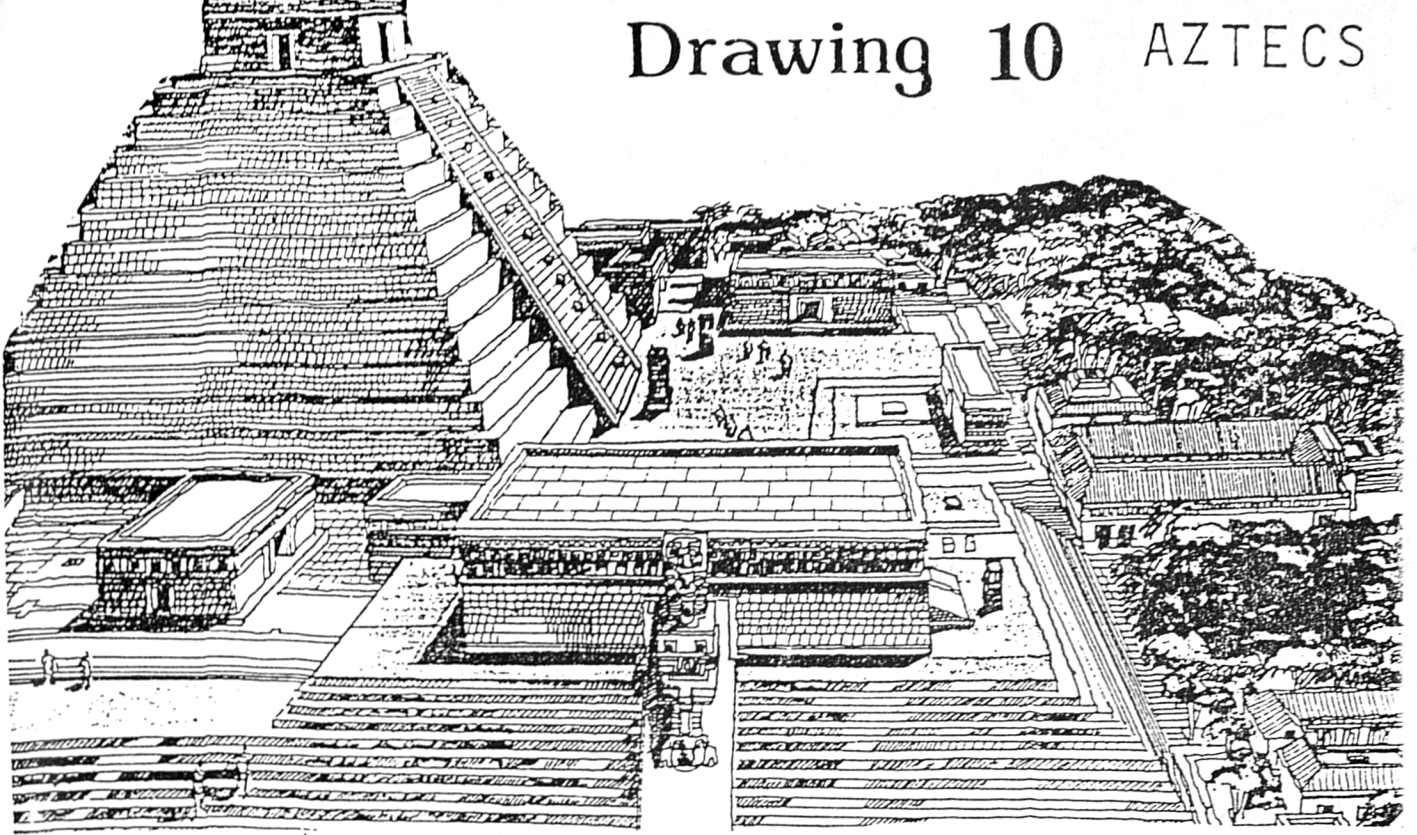
Listen to this piece of music,  
Draw whatever images come into  
your head while the music is  
playing.

## Drawing 8      ODE TO BILLY JOE

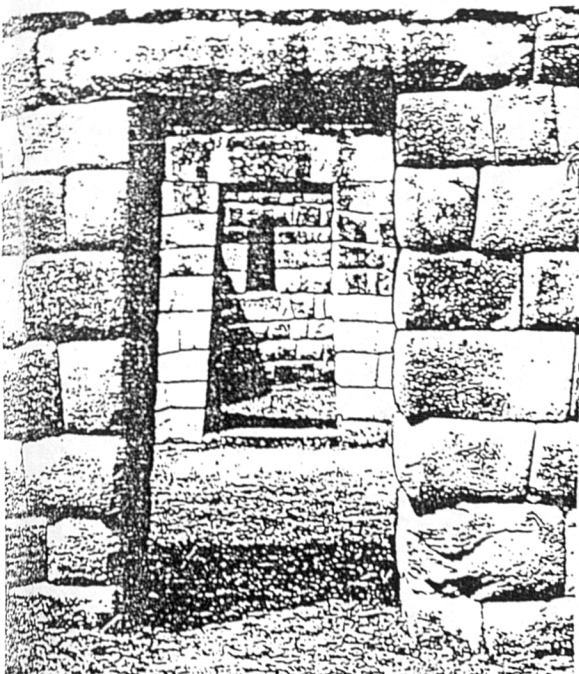
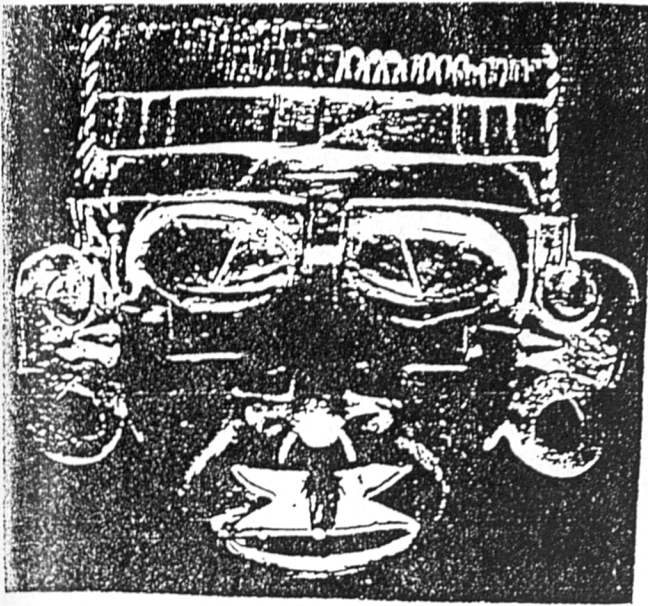
## Drawing 9      HAUNTED HOUSE

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Stood thronging the faint moonbeams on the dark stair,  
That goes down to the empty hall,  
Harkening in an air stirred and shaken  
By the lonely Traveller's call.  
And felt in his heart their strangeness,  
Their stillness answering his cry,  
Never the least stir made the listeners,  
Through every word he spake  
Fell echoing through the shadowiness of the still house

# Drawing 10 AZTECS



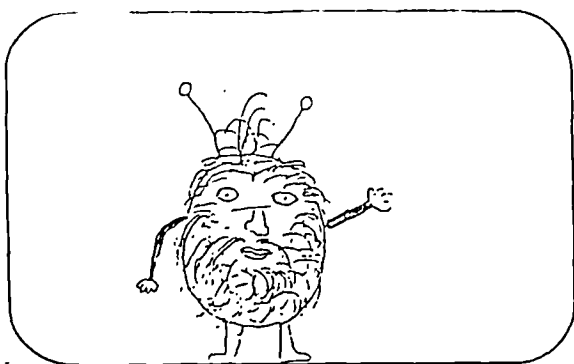




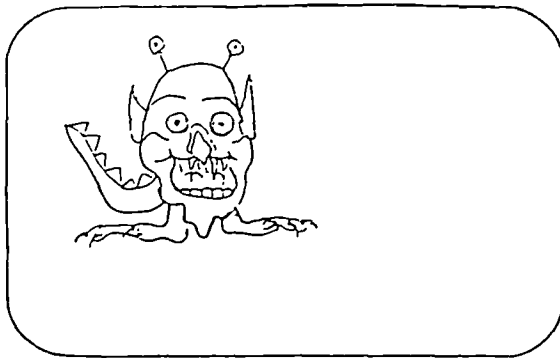
Appendix 5.7



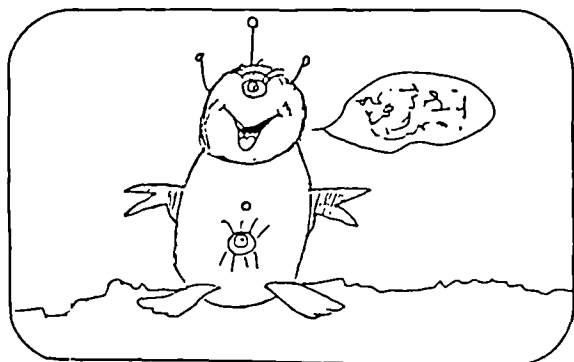
1



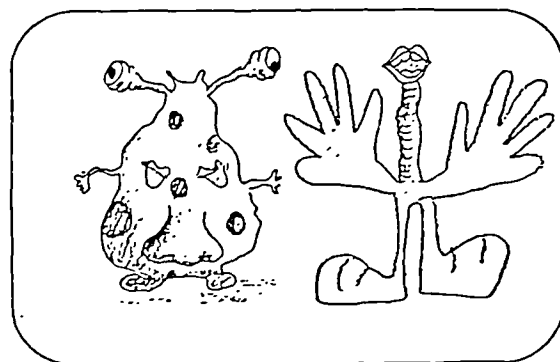
2



3



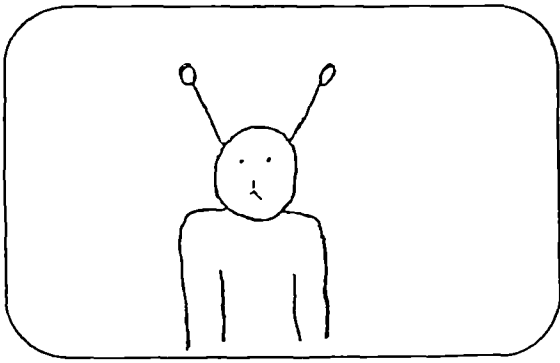
4



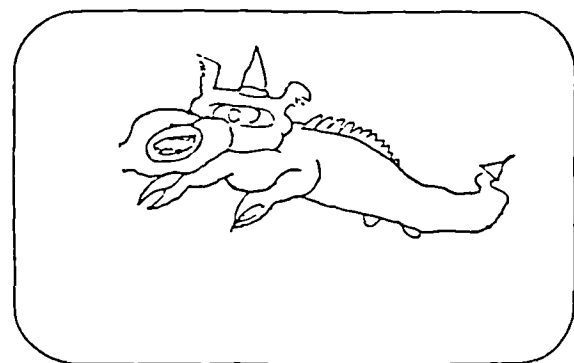
5



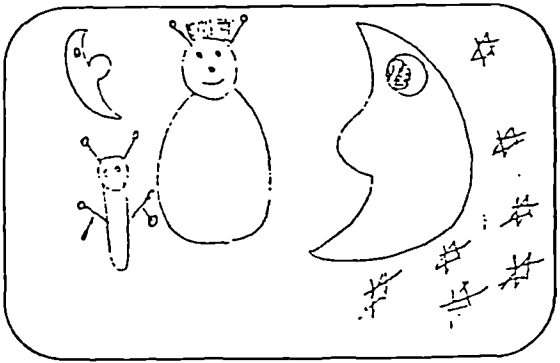
6



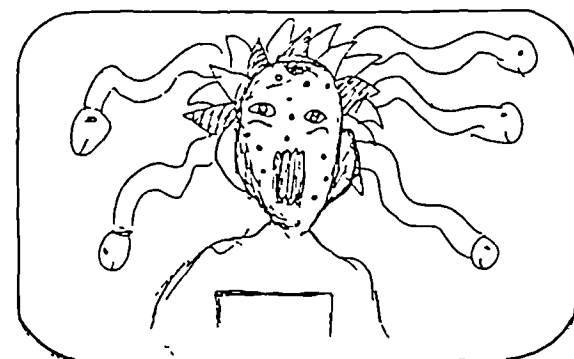
7



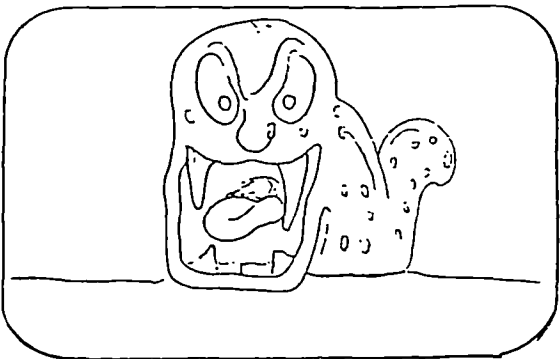
8



9



10



# KENDALL'S W

To measure the relation among 20 judges' rankings of 10 pupil drawings using the Kendall coefficient of concordance W.

W expresses the degree of association between the rankings.

$$W = \frac{s}{\frac{1}{12}k^2(N^3 - N) - k \sum_T T}$$

$$\text{Where } s = \left\{ R_j - \frac{\sum R_j}{N} \right\}^2 = \sum D^2$$

N = 10 drawings

k = 20 judges

$T = \frac{\sum(t^3 - t)}{12}$  where t = no. of ties in a group of given rank

As more than 2 sets of rankings are involved, W may take values only between 0 and +1

## RAW DATA

	D R A W I N G S										
	1	2	3	4	5	6	7	8	9	10	
Ranking Totals	122	92	79	33	68	179	85	168	86	86	= 998
D =	22.2	7.8	20.8	66.8	31.8	79.2	14.8	68.2	13.8	13.8	mean 99.8
D <sup>2</sup> =	492	61	433	4462	1011	6273	219	4651	190	190	

$$s = \sum D^2 = 18174$$

T =	1	2	3	4	5	6	7	8	9	10
	2.5	1	3.5	1.5	3	3.5	6.3	0.5	7	7.5
T =	11	12	13	14	15	16	17	18	19	20
	0	2.5	0.5	1	1.5	3.5	3	4.5	5.5	1

$$\sum T = 59.3$$

$$W = \frac{18174}{\frac{400}{12} (990) - (20 \times 59.3)} = \frac{18174}{31814} = .57$$

To test the significance using Chi square  $X = \frac{s}{\frac{1}{12} k N (N+1)}$

$$X = \frac{18174}{183} = 99.3 \quad \text{Statistically significant at the level } p < .001$$

## APPENDIX 5.9

## **IMAGINATIVE DRAWING TESTS**

# **ASSESSMENT CRITERIA**

1. **CONSIDERED RESPONSE :-** a simple solution to the problem,  
a response on an elementary level.
2. **STEREOTYPED RESPONSE:-** expression of an obvious,literal response
3. **NEW ADDITIONS:-** extensions/developments/metamorphoses/transformations of a  
stereotyped response.
4. **ANIMATION:-** introduction of action/articulation/vitality into the work.
5. **ELABORATION:-** introduction of detailing or decoration.
6. **FLUENCY:-** quantity of visual responses or additional ideas.
7. **FLEXIBILITY:-** unusual viewpoint or composition; close-up, profile, bird`s-eye view etc.
8. **CONTEXT:-** the setting of the subject/object in space, location, landscape etc.
9. **ROTATION:-** changing the format, breaking given boundaries.
10. **EMOTION:-** expression of some emotion, sensitivity, or humour.
11. **ORIGINALITY:-** a novel or unique response; stretching of the initial concept.
12. **DISCRETIONARY BONUS :-** an additional mark allowed where the student`s response in  
any of the above areas in exceptional

Maximum 12 marks

# ELEVEN VARIABLES: MEANS & SDs

## SES

Label	Mean	Std Dev
Population	67.7113	27.2069
Artists	67.7519	29.7193
School	67.9865	27.7595
Male	66.4815	22.3562
Female	68.8511	30.6317
HE	67.4364	32.4298
Male	71.8889	26.2596
Female	63.1429	37.4222
non-Artists	67.6308	21.5809
School	65.9714	14.6297
Male	58.9231	12.4128
Female	70.1364	14.4759
HE	69.5667	27.7435
Male	66.7000	38.6984
Female	71.0000	21.4231

## AvOGRADE

Label	Mean	Std Dev
Population	72.4639	19.9385
Artists	73.0698	22.1116
School	76.5946	18.0524
Male	74.0000	14.2748
Female	78.0851	19.8941
HE	68.3273	26.0470
Male	62.7037	28.0299
Female	73.7500	23.1990
non-Artists	71.2615	14.7915
School	70.5714	12.0935
Male	65.6154	11.6515
Female	72.9091	11.9917
HE	72.0667	17.6106
Male	74.0000	5.2068
Female	71.1000	21.3908

(All cases n= 194)

Label	Cases
Population	194
Artists	129
School	74
Male	27
Female	47
HE	55
Male	27
Female	28
non-Artists	65
School	35
Male	13
Female	22
HE	30
Male	10
Female	20

## HOBBIES

Label	Mean	Std Dev
Population	28.347	16.6694
Artists	29.6744	16.2467
School	29.0405	14.4842
Male	26.5556	10.2369
Female	30.4681	16.3705
HE	30.5273	18.4600
Male	33.0370	19.5576
Female	28.1071	17.3447
non-Artist	25.646	17.2938
School	28.4857	16.3354
Male	24.2308	18.0564
Female	31.0000	15.0965
HE	22.3333	18.058
Male	14.8000	11.0131
Female	20.1000	19.8863

## CREAFACT

Label	Mean	Std Dev
Population	74.1959	18.1197
Artists	77.4729	15.3094
School	75.1486	16.8650
Male	74.9259	9.8408
Female	75.2765	19.9147
HE	80.6000	12.3971
Male	79.5185	11.2160
Female	81.6429	13.5625
non-Artists	67.6923	21.3717
School	67.6286	21.6592
Male	66.0000	23.0687
Female	68.5909	21.2797
HE	67.7667	21.4004
Male	65.8000	24.5349
Female	68.7500	20.2699

## PATT/PREF

Label	Mean	Std Dev
Population	58.2732	24.5659
Artists	54.3101	26.1237
School	60.3919	24.3011
Male	60.7037	24.4223
Female	60.2128	24.4940
HE	46.1273	26.4659
Male	44.8148	21.9476
Female	47.3929	30.5558
non-Artists	66.1385	18.9867
School	67.2857	14.0557
Male	65.7692	13.2045
Female	68.1818	14.7637
HE	64.8000	23.6751
Male	71.5000	16.5076
Female	61.4500	26.2868

## ORIGINAL

Label	Mean	Std Dev
Population	52.4536	25.5453
Artists	57.7209	25.6256
School	61.3118	21.7019
Male	68.741	20.9283
Female	57.4755	21.3895
HE	49.2000	28.6268
Male	43.2593	29.9057
Female	47.1786	27.8489
non-Artists	45.9692	24.2963
School	48.1714	22.7525
Male	50.9462	28.3427
Female	46.5909	19.2889
HE	43.4000	26.1370
Male	36.8000	32.6966
Female	46.7000	22.4032

## SPATIAL

Label	Mean	Std Dev
Population	50.2010	29.2202
Artists	51.0078	31.2531
School	56.3784	30.1547
Male	57.5926	31.0487
Female	55.6809	29.9464
HE	46.1273	32.0099
Male	53.4444	30.2010
Female	39.0714	32.6462
non-Artists	46.6154	24.5285
School	40.8286	19.5576
Male	51.1538	18.1927
Female	34.7273	18.0322
HE	53.3667	28.1392
Male	60.8000	25.1210
Female	49.6500	29.4266

## CRE-PERS

Label	Mean	Std Dev
Population	67.7216	22.0241
Artists	65.9225	25.4345
School	68.7297	21.2418
Male	67.2227	20.6720
Female	69.5957	21.7352
HE	62.1455	29.9688
Male	66.4074	24.4843
Female	58.0357	34.3991
non-Artists	71.2923	12.2254
School	71.5143	10.1471
Male	72.6923	8.1075
Female	70.8182	11.3038
HE	71.0333	14.4568
Male	73.1000	4.2292
Female	70.0000	17.5259

## SELF-ACT

Label	Mean	Std Dev
Population	75.1174	15.8120
Artists	75.7132	16.8027
School	73.1351	18.4876
Male	72.2593	15.6343
Female	73.6383	20.0883
HE	79.1818	13.6315
Male	79.5556	8.7060
Female	78.8214	17.2735
non-Artists	73.9231	13.6797
School	76.2571	10.0098
Male	76.1538	7.7551
Female	76.3182	11.3069
HE	71.2000	16.7711
Male	71.2000	13.8307
Female	71.2000	18.4037

## DIVERGENT

Label	Mean	Std Dev
Population	55.7423	18.6663
Artists	55.0000	20.5407
School	57.5541	11.8739
Male	59.7037	6.2562
Female	56.3191	14.0482
HE	51.5636	28.0811
Male	56.9259	21.2909
Female	46.3929	32.9257
non-Artists	57.2154	14.2681
School	56.2857	15.3997
Male	53.7692	24.3007
Female	57.7727	6.3466
HE	58.3000	12.9991
Male	62.9000	8.6852
Female	56.0000	14.3344

## CULTURE

Label	Mean	Std Dev
Population	57.5412	27.3475
Artists	59.5504	28.1355
School	58.7432	28.1138
Male	58.2222	27.1921
Female	59.0426	28.9159
HE	60.6364	28.3871
Male	60.3333	30.2210
Female	60.9286	27.0554
non-Artists	53.5538	25.4528
School	49.5714	22.5040
Male	51.7692	26.2810
Female	48.2727	20.5059
HE	58.2000	28.1871
Male	59.4000	25.6437
Female	57.6000	30.0007

# APPENDIX A

# **ELEVEN VARIABLES: Table of Bivariate CORRELATION COEFFICIENTS**

All Students (n=194)

	SES	AvOG	HOB	CFAC	PAT	ORIG	SPAT	PER	SACT	DT	CUL
Artist v Control	.00	.04	.11	.26	.23	.18	.09	.16	.05	.06	.10
Male v Female	.02	.15	.07	.02	.03	.07	.15	.03	.01	.11	.01
6 Form v HE	.02	.13	.04	.09	.20	.21	.05	.10	.07	.09	.07
All 6 Form (n=109)											
Artist v Control	.04	.17	.02	.19	.15	.27	.26	.07	.09	.05	.16
Male v Female	.11	.14	.16	.03	.01	.18	.11	.03	.03	.04	.01
All HE (n=85)											
Artist v Control	.03	.08	.21	.36	.33	.08	.11	.17	.25	.14	.04
Male v Female	.07	.15	.02	.01	.02	.02	.19	.10	.05	.17	.01

# **ELEVEN VARIABLES; Table of PARTIAL CORRELATIONS**

All Students (n=194)

All Students (n=194)		Artist v Control								
		HOB	CFAC	PAT	ORIG	SPAT	PER	SACT	DT	CUL
Controlled for SES		.12	.26	.23	.18	.09	.12	.05	.06	.11
Controlled for AvOG		.11	.25	.23	.18	.08	.12	.05	.06	.10
Controlled for SES+AvOG		.11	.25	.23	.18	.09	.12	.05	.06	.10
All Students (n=194)		Male v Female								
Controlled for SES		.07	.01	.03	.07	.15	.04	.02	.11	.02
Controlled for AvOG		.03	.02	.02	.09	.17	.04	.05	.12	.07
Controlled for SES+AvOG		.04	.02	.02	.09	.17	.04	.04	.12	.07
All Students (n=194)		6 Form v Higher Ed								
Controlled for SES		.04	.09	.21	.21	.05	.10	.07	.09	.07
Controlled for AvOG		.00	.13	.19	.19	.03	.09	.10	.07	.13
Controlled for SES+AvOG		.01	.12	.20	.19	.04	.10	.10	.08	.12

6 Form Students only (n=109) Artist v Control

Controlled for SES	.01	.19	.16	.27	.26	.08	.11	.04	.16
Controlled for AvOG	.03	.13	.20	.25	.22	.10	.18	.01	.10
Controlled for SES+AvOG	.02	.13	.20	.26	.23	.10	.17	.02	.11

6 Form Students only (n=109) Male v Female

Controlled for SES	.14	.00	.02	.21	.15	.01	.00	.06	.05
Controlled for AvOG	.13	.04	.03	.21	.18	.00	.03	.07	.08
Controlled for SES+AvOG	.12	.04	.03	.22	.19	.00	.04	.07	.09

HE Students only (n=85) Artist v Control

Controlled for SES	.23	.36	.33	.09	.11	.16	.26	.13	.05
Controlled for AvOG	.24	.37	.34	.10	.12	.17	.26	.13	.07
Controlled for SES+AvOG	.25	.37	.34	.10	.12	.17	.26	.13	.07

HE Students only (n=85) Male v Female

Controlled for SES	.01	.01	.03	.02	.19	.09	.05	.16	.00
Controlled for AvOG	.07	.01	.03	.00	.19	.10	.07	.18	.06
Controlled for SES+AvOG	.05	.00	.05	.00	.18	.08	.06	.16	.05

**ELEVEN VARIABLES : STATISTICAL  
SIGNIFICANCE LEVELS  
OF TWO-TAILED t-tests  
All Students (n=194)**

	SES	AvO	HOB	CFac	PAT	ORIG	SPAT	PER	SaCT	DT	CUL
Artist v Control	.98	.55	.11	.00	.00	.01	.23	.11	.46	.44	.15
Male v Female	.81	.04	.34	.83	.69	.37	.04	.65	.87	.15	.84
6 Form v HE	.83	.08	.61	.20	.01	.00	.52	.17	.33	.24	.32

**All 6 Form (n=109)**

Artist v Control	.69	.08	.86	.05	.12	.00	.01	.46	.35	.64	.09
Male v Female	.28	.14	.09	.77	.93	.06	.25	.79	.77	.70	.92

**All HE (n= 85)**

Artist v Control	.76	.48	.05	.00	.00	.45	.30	.13	.02	.22	.71
Male v Female	.55	.18	.84	.90	.84	.86	.08	.36	.62	.12	.93

**All Artists (n=129)**

Male v Female	.64	.04	.94	.88	.57	.27	.28	.74	.91	.12	.93
6 Form v HE	.92	.04	.61	.05	.00	.01	.07	.15	.04	.10	.71

**All Controls (n= 65)**

Male v Female	.14	.57	.06	.62	.51	.77	.03	.45	.97	.83	.72
6 Form v HE	.51	.69	.15	.98	.60	.43	.04	.88	.14	.58	.18

**All Males (n= 77)**

Artist v Control	.27	.77	.02	.00	.01	.05	.98	.21	.54	.89	.55
6 Form v HE	.26	.20	.54	.31	.05	.01	.99	.86	.18	.84	.53

**All Females (n= 117)**

Artist v Control	.49	.25	.78	.02	.05	.12	.18	.26	.62	.26	.18
6 Form v HE	.60	.31	.29	.39	.05	.11	.32	.12	.73	.09	.45

# CREATIVE PERSONALITY DATA

t-tests: SELF-ASSESSED PERSONALITY

TABLE OF RESULTS BY GROUP: LEVELS OF STATISTICAL SIGNIFICANCE

32 ITEMS		ABILITY						GENDER						AGE					
		ALL		MALE		FEM		ALL		ART		CONT		ALL		ART		CONT	
		A	C	A	C	A	C	M	F	M	F	M	F	6F	HE	6F	HE	6F	HE
19	EMPATHY		.83		.52	.74			.03		.04		.41	.05		.16		.17	
20	SOCIAL GROUP	.32		.61		.42		.49		.61		.65			.42		.06	.19	
21	INTEGRITY	.69			.33	.15			.00		.00		.60	.04		.22		.07	
22	TENSION	.97			.03	.16		.05		.73		.00			.23		.34		.47
23	CONFRONT		.10		.25		.28		.15		.24		.62	.02		.17		.04	
24	TAKE RISKS		.74	.81			.56		.56		.88		.43		.12	.19			.41
25	DETERMINED	.51			.27	.14			.00		.00		.87	.14		.63		.06	
26	CURIOUS	.48			.99	.29			.10		.09		.65		.73	.75			.90
27	NEW EXPERIENCE	.57		.57		.77		.86		.85			.88	.01		.02			.21
28	ABSORBED	.01		.25		.02			.74		.43		.99		.64		.37	.78	
29	SELF DISCIPLINE	.16			.63	.03			.44		.09	.32		.47		.58		.66	
30	REJECT LIMITS	.32		.99			.25		.09		.39		.10		.55		.35	.71	
31	ISOLATED	.03		.24		.08		.60		.84		.73			.45		.30	.88	
32	COMMITMENT	.01		.50		.00			.13		.02	.75			.85		.99		.75
33	PLAY	.00		.09		.00		.63			.64	.32			.09		.25		.14
34	EMOTIONAL	.84			.94	.58			.03		.07		.41		.35		.09	.40	
35	INTUITIVE	.15		.97		.05			.13		.08	.96		.77			.86	.40	
36	FREE SPIRIT		.87		.64	.82			.56		.46	.94		.81			.70	.35	
37	ORIGINALITY	.01		.70		.10			.38		.05	.43			.93		.74	.78	
38	UNCONVENTIONAL	.20		.52		.23			.19		.22		.63		.36		.30		.85
39	COMPLEX		.73		.53	.89			.79		.56	.74		.83			.86	.62	
40	SELF CRITICAL	.01		.90		.00			.38		.07	.39		.97		.70			.56
41	RECOGNITION	.01		.31		.01			.59		.28	.74			.83		.35	.41	
42	ORGANISED		.75		.56	.83			.02		.03		.47		.80		.72	.96	
43	OWN RULES		.53		.57		.80		.27		.31		.58		.82	.93			.57
44	COMPETENT	.10		.05		.51			.28		.86		.39		.57		.31	.70	
45	REFLECTIVE	.05			.74	.01		.70			.39	.08			.75		.25	.25	
46	INFLUENCE	.82		.99		.73			.27		.43		.64	.90		.85			.92
47	AMBIGUITY	.08		.03		.61			.11		.59		.22		.37		.16	.62	
48	RANGE	.35		.14			.87		.36	.87			.14		.12		.33		.74
49	MOTIVATED	.27		.52		.29			.05		.06		.34		.36		.20	.89	
50	OUTSIDE STIM	.12		.21			.30		.44		.58		.47		.38		.41		.70
		25 - 7		18 - 14		26 - 6		6 - 26		5 - 27		13 - 9		10 - 22		11 - 21		20 - 12	
NO OF SS ITEMS		8		3		10		7		6		2		4		1		1	



# FACTOR ANALYSIS CREATIVE PERSONALITY

Varimax converged in 10 iterations.

ALL STUDENTS

## Rotated Factor Matrix

Number of Cases = 171

	Mean	Std Dev	Label	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
LF19	3.12281	.74526	EMPATHY	.38036	.14960	.12985	.04169
LF20	2.35673	.88530	SOCIAL GROUP	-.10591	.07618	.27121	.72676
LF21	2.73099	.92554	INTEGRITY	.61289	.21050	-.23864	.09288
LF22	2.64912	.84348	TENSION	.04004	-.24984	-.01770	.54642
LF23	2.83626	.69204	CONFRONT	.27086	.02695	.40429	-.28827
LF24	3.06433	.65211	RISKS	.18764	-.11382	.34104	-.26279
LF25	3.25731	.68030	DETERMINATION	.36477	.57166	.15797	-.10605
ELF26	3.29825	.71862	CURIOUS	.56317	-.01019	.18528	-.04478
ELF27	3.53216	.62578	NEW EXPERIENCE	.27975	-.31752	.42114	-.26501
ELF28	3.06433	.67863	ABSORB	.42978	.12196	.20727	-.08656
ELF29	2.78363	.77836	SELF DISCIPLINE	.04320	.76705	.04277	-.07480
ELF30	2.60819	.87026	LIMITS	.07523	.13847	.30593	.03498
ELF31	2.48538	.88355	ISOLATED	.00037	.09655	.01328	.77777
ELF32	3.16374	.66605	COMMITMENT	.34833	.69041	-.13535	.09491
ELF33	2.80117	.61949	PLAY	.36246	.01828	.39415	.12366
ELF34	3.39181	.65417	EMOTION	.56143	.11178	.19599	.07894
ELF35	3.04094	.68046	INTUITION	.50283	-.01887	.35450	-.04710
ELF36	2.88304	.74226	FREE SPIRIT	-.03145	.08379	.64068	-.04181
ELF37	3.17544	.73859	ORIGINAL	.47322	-.22084	.28280	.04659
ELF38	3.04094	.81426	UNCONVENTIONAL	.00525	-.10743	.53624	.12672
ELF39	2.77778	.81730	COMPLEX	.34441	-.00286	.07993	-.07247
ELF40	3.05263	.81358	SELF CRITICAL	.30233	-.13561	-.19468	.56990
ELF41	3.26316	.69940	RECOGN	.60026	.01592	-.18576	.24424
ELF42	2.84211	.87695	ORGANISING	-.00986	.74042	.05645	-.08463
ELF43	2.90643	.88949	OWN RULES	.13374	.04963	.43718	.09486
ELF44	3.38596	.71343	COMPETENT	.43573	.27496	-.17323	-.13104
ELF45	3.12865	.81591	REFLECTIVE	.16595	-.27012	.24474	.49160
ELF46	2.86550	.76661	INFLUENCE	.18404	-.08077	.35593	-.30148
ELF47	3.00000	.67737	AMBIGUITY	.06641	.03920	.53845	.03162
ELF48	3.19883	.64735	RANGE	.34104	.03770	.26082	-.24345
ELF49	2.56725	.90741	MOTIVATION	.08003	.78715	.06825	-.02411
ELF50	2.83041	.82634	OUTSIDE STIMULU	.41014	.14185	.16359	.24380

## Communality

ELF19	.18565
ELF20	.61875
ELF21	.48552
ELF22	.36291
ELF23	.32064
ELF24	.23353
ELF25	.49605
ELF26	.35359
ELF27	.42666
ELF28	.25004
ELF29	.59766
ELF30	.11965
ELF31	.61443
ELF32	.62532
ELF33	.30236
ELF34	.37234
ELF35	.38109
ELF36	.42023
ELF37	.35485
ELF38	.31518
ELF39	.13027
ELF40	.47248
ELF41	.45473
ELF42	.55864
ELF43	.22048
ELF44	.31244
ELF45	.40208
ELF46	.25748
ELF47	.24687
ELF48	.24507
ELF49	.63125
ELF50	.27454

## Factor Transformation Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
FACTOR 1	.78836	.38531	.47836	-.03444
FACTOR 2	.12911	-.83891	.47905	.22379
FACTOR 3	.19141	.09132	-.92260	.92247
FACTOR 4	-.57024	.37341	.66152	.31270

Factor	Eigenvalue	Pct of Var	Cum Pct
1	4.54727	14.2	14.2
2	3.11461	9.7	23.9
3	2.68984	8.4	32.3
4	1.74175	5.4	37.8

## CORRELATION MATRIX: Cognitive Factors v Personality Factors

Correlations:	Pers F 1 "Openness"	Pers F 2 "Industry"	Pers F 3 "Independ"	Pers F 4 "Neurotic"
Cogn F 1 "Iconocl"	.2008*	(.1862)*	.3422**	.0399
Cogn F 2 "Fluent"	.0287	.0368	.2956**	(.3394)**
Cogn F 3 "Percept"	.3424**	.2346*	.2446**	(.1588)
Cogn F 4 "Curious"	.2651**	(.1903)*	.1298	.1971*

1-tailed significance = (\* >.01 \*\* >.001) n = 171

# ARTISTS

varimax converged in 8 iterations.

Rotated Factor Matrix:

	FACTOR 1 INDUSTRIAL	FACTOR 2 OPENNESS	FACTOR 3 NEUTRAL	FACTOR 4 INDEPENDENT
SELF19	.25657	.19912	.25594	.23877
SELF20 SOCIAL	-.00653	-.13829	.64485	.02959
SELF21 INTELLIGENCE	.20819	.37621	.39597	-.13610
SELF22 TENSION	-.32114	.01874	.51698	-.11458
SELF23 CONFIDENT	.14034	.42261	-.21293	.36902
SELF24 RESISTANCE	.00095	-.00823	.01651	.55824
SELF25 DETAIL ORIENTED	.85603	.36458	-.00555	.07656
SELF26 CURIOUS	.07921	.53722	.17065	-.01384
SELF27 NEW GUY	-.25766	.28412	-.08461	.53555
SELF28 ABSORBED	.18896	.44663	.17857	.24990
SELF29 SELF DISCIP	.71492	.00075	-.16995	-.03603
SELF30	.19985	.02825	.21880	.14840
SELF31 ISOLATED	.02511	-.07261	.65928	-.25353
SELF32 COMPLETED	.72005	.12708	.16028	-.11043
SELF33 PLAN	.09955	.43892	.26652	.24550
SELF34	.20747	.32865	.34486	.35395
SELF35 INTUITION	.06311	.63308	.12652	.21315
SELF36 FREE SPIRIT	.28839	.18731	-.08511	.44802
SELF37 CREATIVITY	-.18872	.56032	-.00379	.21199
SELF38 UNCOMFORT	-.00634	.00218	-.05623	.54053
SELF39 COMPLEX	.03511	.21107	-.14063	.13216
SELF40 SELFISH	.16587	.08024	.68377	-.11119
SELF41 RECOGNITION	.08592	.52028	.28402	-.16190
SELF42 UNCOMFORT	.66552	.02933	-.16894	-.00712
SELF43	.19296	.18630	.26030	.33047
SELF44 COMPLETION	.12351	.39024	-.11999	-.06626
SELF45 REFLECTION	-.26391	.10532	.41751	.25939
SELF46 WILLINGNESS	-.10144	.15215	-.15581	.46578
SELF47 AMBIGUITY	.10024	-.13240	.14311	.70225
SELF48 RATHER	-.06334	.57599	-.27070	-.01590
SELF49 MOTIVATION	.78435	-.06072	.04194	.13335
SELF50 OUT OF TIME	.10416	.18828	.38612	.25116

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
FACTOR 1	.49686	.67031	.23232	.49884
FACTOR 2	-.68541	.19613	.69472	.09540
FACTOR 3	.50191	-.14842	.50169	-.58698
FACTOR 4	.17729	-.70014	.28610	.62071

# CONTROLS

varimax converged in 7 iterations.

Rotated Factor Matrix:

	FACTOR 1 INDUSTRIAL	FACTOR 2 OPENNESS	FACTOR 3 INDEPENDENT	FACTOR 4 NEUTRAL
SELF19	.18206	.42577	.12088	.02834
SELF20	.08571	-.01368	.15414	.78884
SELF21	.45162	.56033	.22002	.18373
SELF22	-.19489	.13289	.15107	.54343
SELF23	-.05107	.37850	.36346	.07580
SELF24	.17102	.27285	.23234	.55624
SELF25	.53979	.22837	.22881	.00815
SELF26	.02890	.65787	.40631	.20780
SELF27	-.25980	.22593	.52810	.33392
SELF28	.13840	.18212	.14263	.60841
SELF29	.75629	.04325	-.03845	.04925
SELF30	.13345	.00734	.58917	.08122
SELF31	.11767	.08403	.03631	.77982
SELF32	.73031	.31881	.22671	.10888
SELF33	-.05636	.10608	.55428	.00752
SELF34	.08618	.71821	-.01270	.03204
SELF35	-.09191	.38783	.36553	.15078
SELF36	.30977	.04249	.55291	.27071
SELF37	.15826	.48652	.35489	.10575
SELF38	.27442	.27024	.28683	.45433
SELF39	.16890	.71782	.07498	.10328
SELF40	-.02924	.30539	.44232	.19068
SELF41	.02673	.61886	.34325	.08826
SELF42	.82265	-.08317	.00420	.01910
SELF43	-.13682	.02301	.38763	-.01920
SELF44	.60710	.32815	.17211	.28151
SELF45	-.28272	.23225	.08778	.59888
SELF46	.08007	.19581	.39510	.30810
SELF47	.01980	.02621	.54702	.16814
SELF48	.28282	.20986	.20986	.01062
SELF49	.81192	-.04281	-.01888	.02825
SELF50	.34902	.39593	.18730	.16890

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
FACTOR 1	.65032	.65227	.24005	-.30860
FACTOR 2	-.56178	.32638	.75908	.11814
FACTOR 3	.13124	.36532	.19887	.89987
FACTOR 4	.50538	.57898	.57152	.28704

# FACTOR ANALYSIS CREATIVE PERSONALITY

## MALES

FACTOR ANALYSIS

Values Rotation 1. Extraction 1. Analysis 1 - Kaiser Normalization.

Values covered in 11 factors.

Rotated Factor Matrix:

	FACTOR 1 OPENNESS	FACTOR 2 INDUSTRIOUS	FACTOR 3 NEUROTIC	FACTOR 4 INDEPENDENT
SELF19	.33389	.10187	.34226	.23253
SELF20	.12800	.27239	.74671	.01813
SELF21	.82149	.00258	.10451	.20832
SELF22	.11934	.26288	.48620	.08539
SELF23	.40045	.18209	.20888	.16992
SELF24	.08875	.28585	.08795	.32438
SELF25	.64278	.42283	.17808	.12011
SELF26	.83117	.05680	.08187	.12509
SELF27	.23551	.37310	.09821	.51703
SELF28	.41182	.10474	.02818	.08058
SELF29	.12806	.73269	.08183	.18403
SELF30	.01851	.23773	.29808	.00487
SELF31	.05193	.13234	.72849	.01831
SELF32	.39843	.62521	.18978	.18084
SELF33	.18878	.08447	.16313	.47411
SELF34	.80520	.03706	.23870	.26825
SELF35	.63383	.01303	.12038	.15914
SELF36	.08851	.47889	.10621	.39279
SELF37	.23280	.18841	.02185	.38538
SELF38	.00821	.00821	.04740	.62910
SELF39	.07535	.05895	.08680	.15778
SELF40	.25171	.38358	.88850	.04489
SELF41	.51887	.30236	.98471	.10318
SELF42	.13890	.78114	.02586	.05342
SELF43	.07287	.03845	.38384	.07105
SELF44	.51900	.10457	.13923	.13199
SELF45	.18734	.20268	.60719	.28444
SELF46	.31022	.21562	.21639	.38518
SELF47	.13785	.12119	.12348	.85406
SELF48	.45294	.04809	.02819	.20989
SELF49	.19212	.73848	.08031	.00270
SELF50	.44472	.05633	.17404	.33831

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
FACTOR 1	.98087	.22332	.35893	.16307
FACTOR 2	.04113	.76524	.34358	.54143
FACTOR 3	.44835	.30042	.83889	.10729
FACTOR 4	.23778	.46788	.22318	.82155

## FEMALES

FACTOR ANALYSIS

Values Rotation 1. Extraction 1. Analysis 1 - Kaiser Normalization.

Values covered in 7 factors.

Rotated Factor Matrix:

	FACTOR 1 INDEPENDENT	FACTOR 2 INDUSTRIOUS	FACTOR 3 NEUROTIC	FACTOR 4 OPENNESS
SELF19	.27840	.24993	.09521	.05182
SELF20	.07713	.08478	.68838	.09745
SELF21	.06743	.21198	.15348	.58811
SELF22	.12641	.19942	.63988	.04002
SELF23	.62219	.01447	.08059	.11798
SELF24	.48878	.08181	.28321	.00880
SELF25	.35249	.68151	.12834	.05278
SELF26	.57133	.00578	.17302	.15567
SELF27	.57854	.22157	.27352	.14170
SELF28	.36593	.08853	.08313	.48847
SELF29	.06441	.76715	.04880	.08888
SELF30	.31222	.04149	.13944	.12543
SELF31	.25550	.08651	.74853	.04537
SELF32	.13450	.62874	.05805	.50339
SELF33	.46670	.11289	.21045	.41174
SELF34	.36638	.23809	.20888	.17160
SELF35	.60232	.11652	.18031	.07812
SELF36	.43738	.12783	.02808	.01848
SELF37	.39867	.20732	.18818	.52536
SELF38	.14025	.10725	.20074	.00221
SELF39	.23383	.05789	.21450	.80457
SELF40	.04885	.10988	.58877	.09534
SELF41	.03088	.72488	.20567	.60080
SELF42	.46013	.05283	.12241	.04865
SELF43	.01204	.18639	.02839	.07578
SELF44	.22974	.20980	.14497	.53289
SELF45	.48463	.12408	.58742	.20324
SELF46	.45001	.18188	.16403	.25522
SELF47	.50134	.07783	.04859	.10439
SELF48	.08743	.67858	.18256	.01445
SELF49	.20506	.18888	.23509	.29045
SELF50			.35588	.24440

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
FACTOR 1	.83709	.31039	.04217	.44852
FACTOR 2	.08821	.77086	.00760	.38725
FACTOR 3	.04301	.19252	.93293	.30122
FACTOR 4	.52188	.52218	.35750	.74181

## SIXTH FORM

--- FACTOR ANALYSIS ---

Varimax Rotation 1, Extraction 1, Analysis 1 - Kaiser Normalization.

Varimax converged in 7 iterations.

Rotated Factor Matrix:

	FACTOR 1 OPENNESS	FACTOR 2 INDEPENDENT	FACTOR 3 INDUSTRIALISM	FACTOR 4 NEUTRALITY
SELF19	.41693	.33976	-.20549	-.10194
SELF20	-.12225	.02948	.09295	-.68843
SELF21	.66183	-.13059	.18461	.20516
SELF22	.17485	-.20167	-.27668	-.56565
SELF23	.14689	.53190	-.04924	-.07067
SELF24	.01016	.43172	-.11543	-.01882
SELF25	.18823	.28097	.64859	-.03982
SELF26	.64502	.26608	-.03559	.01124
SELF27	.25886	.51479	-.18516	-.20282
SELF28	.35059	.33247	-.02933	-.07392
SELF29	-.02048	-.05380	.77213	-.03437
SELF30	.30051	.07837	-.08625	.01930
SELF31	.00942	.12028	.05460	.76874
SELF32	.24530	-.24030	.71176	.05823
SELF33	.39812	.32206	.16154	.07640
SELF34	.42728	.37956	.11904	.20771
SELF35	.42191	.51643	.00937	-.04704
SELF36	-.14230	.68394	.02021	-.06254
SELF37	.56171	.31494	-.11443	.03238
SELF38	.08286	.24712	-.07507	.18542
SELF39	.55616	-.13072	.07507	.11751
SELF40	.17828	-.08155	-.02190	.49349
SELF41	.62099	-.09496	.08785	.25179
SELF42	.00750	-.09693	.67914	-.04084
SELF43	.03283	.51571	.04938	.15751
SELF44	.47978	-.20082	.27032	-.23899
SELF45	.08903	.24475	-.06247	.58219
SELF46	.06165	.52371	-.13116	-.15268
SELF47	-.02264	.48692	.26221	.07995
SELF48	.15685	.14660	.14160	-.26052
SELF49	-.00783	-.07983	.81149	-.07790
SELF50	.30049	-.29222	.38088	.28561

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
FACTOR 1	.75223	.55940	.32337	.12904
FACTOR 2	.07308	-.58272	.80519	.08226
FACTOR 3	.26231	-.33952	-.35441	.83085
FACTOR 4	-.60000	.48191	.34856	.33504

## HIGHER EDUCATION

--- FACTOR ANALYSIS ---

Varimax Rotation 1, Extraction 1, Analysis 1 - Kaiser Normalization.

Varimax converged in 11 iterations.

Rotated Factor Matrix:

	FACTOR 1 INDUSTRIALISM	FACTOR 2 NOVEL	FACTOR 3 CHAMBERS	FACTOR 4 INDEPENDENT
SELF19	.10444	-.06772	.38831	-.00528
SELF20	-.13283	.50016	.09604	-.06115
SELF21	.20833	-.12833	.62974	.02671
SELF22	-.36503	.19839	.02948	-.14786
SELF23	.36197	.34691	.03247	.10158
SELF24	-.00226	.16727	.20867	.63729
SELF25	.57407	.16832	.33331	.09845
SELF26	.12969	.32073	.22783	.18084
SELF27	-.29436	.27702	.13424	.53809
SELF28	.46788	.21443	.41775	.10419
SELF29	.73180	.02455	.06444	.02375
SELF30	.35368	.29639	-.02837	-.01731
SELF31	-.03777	.25661	.14269	-.71892
SELF32	.59602	.01946	.58654	-.04370
SELF33	-.02520	.56979	.09920	.06650
SELF34	.18114	.47145	.62149	.12466
SELF35	.16134	.16195	.26661	.04305
SELF36	.28291	.57822	-.14334	-.02817
SELF37	-.13266	.58961	.02039	.04394
SELF38	-.03869	.84633	-.18432	.15624
SELF39	.07002	.25095	-.10717	.40967
SELF40	-.35900	.08294	.56684	-.50034
SELF41	-.05149	.11043	.46650	-.16585
SELF42	.75806	-.05611	.04103	.06806
SELF43	.16015	.41461	.06486	-.08040
SELF44	.17641	-.06551	.55465	.11458
SELF45	-.44666	.46409	.05887	-.19788
SELF46	.04524	.12709	.13707	.49466
SELF47	-.23345	.37810	.17571	.32631
SELF48	.10819	.41122	-.20273	.30175
SELF49	.75962	.14724	.19149	-.05499
SELF50	-.22082	.07093	.55419	.07971

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
FACTOR 1	.72498	.36687	.49593	.30638
FACTOR 2	-.47860	.21464	-.20155	-.20155
FACTOR 3	.08826	-.28556	.55972	-.77291
FACTOR 4	-.48748	-.31755	.62825	.51663

	Mean	Std Dev	Label
SELF01	2.62573	.55332	INTELLI
SELF02	3.22222	.66667	ORIGINAL
SELF03	2.64912	.76292	FLUENCY
SELF04	3.50877	.71429	IMAGINATION
SELF05	2.94152	.59119	FLEXIBILITY
SELF06	2.76023	.73232	ANALOGY
SELF07	2.58480	.89941	QUICK DECISION
SELF08	2.93567	.70416	OWN JUDGEMENT
SELF09	3.36257	.74959	NOVELTY
SELF10	2.88889	.70664	LOGIC
SELF11	3.20468	.78903	VISUALISE
SELF12	3.12865	.64703	PERCEPTION
SELF13	2.75439	.78097	CHAOS
SELF14	3.09942	.75658	NON VERBAL
SELF15	2.93567	.76809	Q NORMS
SELF16	2.85380	.77969	Q WHY
SELF17	3.16959	.78994	GAPS IN KNOWLEDGE
SELF18	3.42690	.65904	EXPLORE

# FACTOR ANALYSIS

## COGNITIVE STYLE

### ALL STUDENTS

Number of Cases = 171

Varimax Rotation 1, Extraction 1, Analysis 1 - Kaiser Normalization.

Varimax converged in 11 iterations.

Rotated Factor Matrix:

Label	FACTOR 1 ICONOCLASTIC	FACTOR 2 FLUENCY	FACTOR 3 PERCEPTIVE	FACTOR 4 CURIOUS
SELF01 INTELLIGENCE	.04970	.04144	.29280	.20449
SELF02 ORIGINALITY	.17951	.06751	.49916	.12943
SELF03 FLUENCY	.14120	.63608	.07169	-.09089
SELF04 IMAGINATION	.19355	.14164	-.10037	.50413
SELF05 FLEXIBILITY	.24991	.09632	.40873	-.06953
SELF06 ANALOGY	.52748	.28497	.07256	.09747
SELF07 QUICK DECISION	.07093	.52075	.21816	-.08249
SELF08 OWN JUDGEMENT	.44553	.48647	.00135	.00410
SELF09 NOVELTY	.02215	.54995	-.04046	.31765
SELF10 LOGIC	-.07878	.02955	.51157	-.08655
SELF11 VISUALISE	-.09168	.50225	.12866	.12806
SELF12 PERCEPTION	-.06832	.11175	.67538	-.09781
SELF13 CHAOS	.53956	.12881	.13433	-.19203
SELF14 NON VERBAL	.15312	.06665	.53078	.15019
SELF15 Q NORMS	.69024	-.13925	.10810	.30106
SELF16 Q WHY	.49746	-.13975	.08973	.46153
SELF17 GAPS IN KNOWLED	.04905	-.04790	.02191	.67558
SELF18 EXPLORE	-.31916	.18469	.25783	.62954

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
FACTOR 1	.55741	.51336	.51117	.40553
FACTOR 2	-.28819	.46276	.42349	-.72350
FACTOR 3	-.76744	.07603	.32738	.54596
FACTOR 4	.13141	-.71870	.67244	-.11843

CORRELATION MATRIX: Cognitive Factors v Personality Factors

Correlations:	Pers F 1 "Openness"	Pers F 2 "Industry"	Pers F 3 "Independ"	Pers F 4 "Neurotic"
Cogn F 1 "Iconocl"	.2008*	(.1862)*	.3422**	.0399
Cogn F 2 "Fluent"	.0287	.0368	.2956**	(.3394)**
Cogn F 3 "Percept"	.3424**	.2346*	.2446**	(.1588)
Cogn F 4 "Curious"	.2651**	(.1903)*	.1298	.1971*

1-tailed significance = (\* >.01 \*\* >.001 ) n = 171

# ORIGINAL IMAGE PRODUCTION DATA

## ORIGINAL IMAGE PRODUCTION (OIP)

### STATISTICAL SIGNIFICANCE LEVELS of t-tests (two-tailed)

### TEN CRITERIA

	GENDER						ABILITY						AGE						FREQ/CY SS ITEMS
	ALL		ART		CONT		ALL		MALE		FEM		ALL		ART		CONT		
	M	F	M	F	M	F	A	C	A	C	A	C	6F	HE	6F	HE	6F	HE	
1 Continuation	.17			.30	.21		.00		.13		.00			.19	.03			.02	4
2 Completion	.14			.78	.21		.00		.11		.00			.19	.40			.05	3
3 Connection	.00		.02		.10		.00		.03		.00			.14		.04		.53	6
4 New Elements	.02		.15		.15		.00		.11		.00			.20		.86		.13	3
5 Theme	.02		.19		.13		.00		.11		.00			.53	.64			.16	3
6 Perspective	.15		.41		.74		.00		.00		.00		.13		.02			.28	4
7 Rotation	.23		.25		.78			.37		.82		.26		.03		.02		.84	2
8 Humour	.00		.00		.02		.00		.16		.01		.89		.74			.78	5
9 Originality	.00		.03		.04		.00		.09		.00		.06		.01			.77	6
10 Bonus	.00		.01		.01		.00		.00		.00		.29		.21		.96		6
	10.0		8.2		10.0		9.1		9.1		9.1		4.6		7.3		1.9		
No of SS Items	6		4		5		9		3		9		1		5		2		42

# FACTOR ANALYSIS DIVERGENT THINKING ALL STUDENTS

	Mean	Std Dev	Variable	Communality
DIVERG01	1.68293	1.06106	DIVERG01	.67339
DIVERG02	2.66463	1.35338	DIVERG02	.60740
DIVERG03	2.70732	1.16690	DIVERG03	.45887
DIVERG04 *	4.45732	.86762	DIVERG04	.62832
DIVERG05	4.47561	.76304	DIVERG05	.50415
DIVERG06	2.43902	1.17851	DIVERG06	.59240
DIVERG07	4.01829	.86848	DIVERG07	.50344
DIVERG08	3.62805	.99788	DIVERG08	.63017
DIVERG09	3.41463	1.27699	DIVERG09	.41354
DIVERG10	2.17683	.99653	DIVERG10	.35719
DIVERG11	3.43902	1.02840	DIVERG11	.65281
DIVERG12	4.24390	.87306	DIVERG12	.62923
DIVERG13 *	2.45122	1.13129	DIVERG13	.50140
DIVERG14	2.32927	1.05149	DIVERG14	.59632
DIVERG15	2.12805	1.14128	DIVERG15	.59364
DIVERG16	4.21951	.90023	DIVERG16	.53342

Number of Cases = 164

Varimax Rotation 1, Extraction 1, Analysis 1 - Kaiser Normalization

Varimax converged in 9 iterations.

Rotated Factor Matrix:

	FACTOR 1 CONFORMIST	FACTOR 2 SELF-CONTAINED	FACTOR 3 INDIVIDUAL	FACTOR 4 SUBORDINATE
DIVERG01	SOCIABLE .74679	-.25055	.17148	-.15334
DIVERG02	NEAT & TIDY .77528	-.05571	.04228	.03817
DIVERG03	OBEDIENT .59386	.21488	-.05425	.23892
DIVERG04	LOW SELF ESTEEM .04462	-.14706	.03239	.77695
DIVERG05	IMAGINATIVE -.28297	.50669	.27639	.30158
DIVERG06	RESPECTFUL .75777	-.05303	-.12037	.02965
DIVERG07	INDEPENDENT -.06684	.63320	-.30439	-.07327
DIVERG08	ECCENTRIC .17339	.74377	.10941	-.18695
DIVERG09	SET OPINIONS .07684	.09610	-.12559	.61857
DIVERG10	ACCEPT EXPERTS .57777	.11213	-.09518	.04163
DIVERG11	UNCONVENTIONAL .20502	-.00964	.73476	-.26610
DIVERG12	ORIGINAL -.18333	.14048	.75700	.05333
DIVERG13	BAD LANGUAGE .67097	.15393	.05570	-.15619
DIVERG14	GOOD MANNERS .73968	-.08561	-.06314	.19463
DIVERG15	TEAM MEMBER .76061	-.08367	.08338	-.03401
DIVERG16	SENSITIVE .02226	.61351	.35924	.16577

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
FACTOR 1	.99740	-.07156	-.00428	.00720
FACTOR 2	.06317	.84877	.52497	-.00359
FACTOR 3	.01784	.35725	-.57472	.73604
FACTOR 4	-.02968	-.38321	.62776	.67689

Factor	Eigenvalue	Pct of Var	Cum Pct
1	4.20641	26.3	26.3
2	1.96179	12.3	38.6
3	1.50786	9.4	48.0
4	1.19962	7.5	55.5

## APPENDIX K



# SELF ACTUALISATION

*HOW IMPORTANT IS IT FOR YOU TO:-*

ITEM 1	REALIZE YOUR FULL POTENTIAL?
2	BE HAPPY/FULFILLED IN YOUR LIFE?
3	WIN THE RESPECT OF OTHERS?
4	RETAIN YOUR INDIVIDUALITY?

*WHICH OF THESE CHARACTERISTICS APPLY TO YOU?*

ITEM 5	I ACCEPT REALITY PHILOSOPHICALLY
6	I KNOW MYSELF (PERSONALITY) WELL
7	I AM SPONTANEOUS
8	I PREFER SIMPLE NATURAL THINGS
9	I LIKE TO SOLVE PROBLEMS
10	I LIKE TO BE PRIVATE, DETACHED
11	I AM AUTONOMOUS (LIKE TO CONTROL MY OWN LIFE)
12	I AM INDEPENDENT
13	I AM WILFUL
14	I AM ACTIVE
15	I LIKE TO LEARN NEW THINGS
16	I ACCEPT THAT THERE ARE MYSTIC EXPERIENCES
17	I PREFER DEMOCRATIC SITUATIONS
18	I HAVE AN UNHOSTILE SENSE OF HUMOUR
19	I RESIST STEREOTYPING LABELS
20	I AM EMPATHETIC TOWARDS OTHERS

FROM MASLOW, A.

# SELF-ACTUALISATION DATA

## SELF-ACTUALISATION

### STATISTICAL SIGNIFICANCE LEVELS of t-tests (two-tailed)

### TWENTY CRITERIA

	GENDER						ABILITY						AGE						FREQ SS ITEMS>.05
	ALL		ART		CONT		ALL		MALE		FEM		ALL		ART		CONT		
	M	F	M	F	M	F	A	C	A	C	A	C	6F	HE	6F	HE	6F	HE	
1 Potential		.59		.31	.94		.00		.20		.01			.23		.18		.95	2
2 Fulfilled		.18		.36		.17	.00		.02		.06			.04		.25		.15	3
3 Win Respect		.65		.55	.83		.62			.93	.49			.46	.96			.16	NIL
4 Individual		.98		.38	.66		.00		.07		.00			.10		.92		.05	3
5 Philoophical		.92	.80			.46	.00		.02		.01			.01		.77		.00	5
6 Self Know	.69		.05			.10	.00		.00		.19			.15		.50		.21	3
7 Spontaneous	.07		.07		.88		.30		.18		.92			.11		.16		.46	NIL
8 Natural		.90		.92		.97	.77		.89		.79		.99			.03	.00		2
9 Problem Solver		.46		.22	.53		.91			.37	.42			.57		.14	.25		NIL
10 Detached	.70			.86	.37		.00		.16		.00			.16		.04	.41		3
11 Autonomous		.33		.69		.26	.35		.26		.75			.93		.37	.28		NIL
12 Independent		.09		.02	.68		.24			.57	.03			.01		.12		.00	4
13 Wilful		.07		.02	.88		.16				.87	.00			.92		.66	.60	2
14 Active		.30		.52		.25	.00		.02		.03			.09		.38		.11	3
15 New Things		.79	.82			.26	.00		.01		.01			.00		.00		.03	5
16 Mystic		.00		.01		.41	.48			.93	.17		.09		.65		.02		3
17 Democratic	.67		.57			.84	.11		.18		.34			.02		.45		.00	2
18 Humour	.67		.36			.38	.00		.01		.12			.12		.65		.07	2
19 Resist Stereo		.52	.61			.09	.04		.02		.56			.05		.48		.03	4
20 Empathetic		.05		.10		.35		.14		.31		.38		.12		.05	.91		2
	5-15		7-13		8-12		19-1		14-6		19-1		2-18		2-18		7-13		
No of SS Items	2		4		0		10		7		8		6		4		8		49

SELF ACTUALISATION: Final Data

Group	Item	Mean	SD	Mean	SD	SS	F/X
		ARTIST		CONTROL			
Artist/ Control	1 Potential	4.45	.75	4.04	.94	.004	.44
	2 Fulfilled	4.75	.06	4.31	1.05	.004	.42
	4 Individual	4.62	.73	3.97	1.04	.000	.63
	5 Philosophic	3.60	.82	2.93	1.18	.000	.51
	6 Know Self	4.15	.89	3.48	1.32	.001	.51
	10 Detached	3.17	.98	2.71	.80	.001	.58
	14 Active	3.87	1.00	2.39	1.13	.002	.51
	18 Humour	3.82	1.01	3.26	1.24	.004	.45
	19 Stereotype	3.95	.97	3.57	1.21	.042	.31
		M ARTIST		F ARTIST			
Male/ Artist/ Control	2 Fulfilled	4.69	.74	4.05	1.12	.02	.57
	5 Philosophic	3.62	.75	2.74	1.52	.02	.58
	6 Know Self	4.32	.74	3.05	1.39	.001	.91
	14 Active	3.80	1.10	3.05	1.08	.02	.69
	15 New Things	4.42	.76	3.68	1.06	.01	.32
	18 Humour	3.92	1.03	3.05	1.22	.01	.71
	19 Stereotype	4.00	.86	3.16	1.30	.02	.65
		F ARTIST		M CONTROL			
Female/ Artist/ Control	1 Potential	4.52	.70	4.03	.90	.006	.54
	4 Individual	4.68	.53	3.92	1.04	.000	.73
	5 Philosophic	3.58	.87	3.03	.97	.006	.57
	10 Detached	3.19	.89	2.65	.96	.003	.63
	12 Independent	4.21	.79	3.78	1.00	.03	.43
	13 Wilful	4.09	.98	3.64	1.10	.04	.41
	14 Active	3.93	.91	3.42	1.16	.03	.44
	15 New Things	4.39	.74	4.00	.75	.01	.52
		MALE		FEMALE			
Male/ Female	16 Mystic	3.43	1.31	3.98	1.07	(.004)	.51
	20 Empathy	3.63	.89	3.90	.88	(.05)	.31
		M ARTIST		F ARTIST			
Artist/ Male/ Female	12 Independent	3.74	1.18	4.21	.79	(.02)	.60
	13 Wilful	3.64	1.05	4.09	.98	(.02)	.46
	16 Mystic	3.44	1.31	4.09	1.04	(.005)	.63
		6 FORM		HIGHER ED			
6 Form/ High Ed	2 Fulfilled	2.50	.84	4.74	.73	(.043)	.33
	5 Philosophic	3.20	1.07	3.62	.85	(.005)	.49
	12 Independent	3.76	1.00	4.18	.93	(.005)	.46
	15 New Things	4.01	.90	4.53	.60	(.000)	.87
	17 Democratic	3.34	1.25	3.76	1.02	(.016)	.41
	19 Stereotype	3.69	1.13	4.00	.97	(.05)	.32
		6 FORM ART		HE ARTIST			
Artist/ 6 Form/ High Ed	8 Natural	3.36	.88	3.74	.90	(.03)	.42
	10 Detached	3.02	1.02	3.38	.90	(.04)	.40
	15 New Things	4.17	.83	.68	.51	(.000)	1.00
	20 Empathetic	3.58	.92	3.91	.95	(.06)	.35
		6F CONTROL		HE CONTROL			
Control/ 6 Form/ High Ed	4 Individual	3.74	.89	4.30	1.19	(.06)	.47
	5 Philosophic	2.44	1.13	3.61	.89	(.000)	1.03
	8 Natural	3.82	1.10	3.00	.80	.002	1.03
	12 Individual	3.55	1.09	4.22	.60	(.005)	1.12
	15 New Things	3.70	.95	4.17	.65	(.03)	.72
	16 Mystic	4.00	1.02	3.21	1.28	.02	.62
	17 Democratic	2.91	1.30	3.87	1.01	(.003)	.95

# FACTOR ANALYSIS

## SELF ACTUALISATION

### ALL STUDENTS

	Mean	Std Dev
SELFAC01	4.31214	.83229
SELFAC02	4.64162	.74623
SELFAC03	4.02890	.97305
SELFAC04	4.44509	.84471
SELFAC05	3.38150	.99657
SELFAC06	3.93064	1.09217
SELFAC07	3.40462	1.00486
SELFAC08	3.50867	.95612
SELFAC09	3.58960	.97605
SELFAC10	3.02890	.94885
SELFAC11	4.25434	.85864
SELFAC12	3.94798	.98987
SELFAC13	3.81503	1.04013
SELFAC14	3.67630	1.07798
SELFAC15	4.24277	.81342
SELFAC16	3.75723	1.20030
SELFAC17	3.52601	1.16423
SELFAC18	3.64162	1.11486
SELFAC19	3.82081	1.06598
SELFAC20	3.79191	.89087

#### - - - - FACTOR ANALYSIS - - - -

Varimax Rotation 1, Extraction 1, Analysis 1 - Kaiser Normalizat

Varimax converged in 9 iterations. Number of Cases = 173

Rotated Factor Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
SELFAC01 Potential	.15743	-.06194	.54534	.47131
SELFAC02 Fulfilled	.09835	.19252	.65893	-.10518
SELFAC03 Respect	-.05641	-.01933	.20388	.29042
SELFAC04 Individual	.10640	.17351	.73215	-.02134
SELFAC05 Philosophic	.44402	-.03606	.62575	-.01516
SELFAC06 Self Know	.41737	.17532	.37740	-.08173
SELFAC07 Spontaneous	.33276	.41927	.01723	.09170
SELFAC08 Natural	-.13340	-.00352	-.07276	.64836
SELFAC09 Probs Solv	-.08195	.22456	-.11038	.61030
SELFAC10 Detached	-.03225	.17463	.36200	.36692
SELFAC11 Autonom	-.07234	.71853	.18248	-.02968
SELFAC12 Independ	.12411	.72270	.14027	.06584
SELFAC13 Willful	.15602	.73774	.00831	.18296
SELFAC14 Active	.42487	.51427	.11137	.00767
SELFAC15 New Things	.40892	.26546	.25519	.34886
SELFAC16 Mystic	.28464	.02329	-.04928	.56372
SELFAC17 Democrat	.40667	.16220	.19590	.07801
SELFAC18 Humour	.74515	-.00898	.11594	-.13729
SELFAC19 Stereo	.74686	.13666	.17389	-.15829
SELFAC20 Empathy	.54831	.12505	-.23523	.35217

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
FACTOR 1	.63347	.53948	.51389	.20880
FACTOR 2	-.29857	.37303	-.35079	.80538
FACTOR 3	-.22395	-.54671	.66342	.45916
FACTOR 4	.67781	-.52050	-.41561	.31134

Factor	Eigenvalue	Pct of Var	Cum Pct
1	4.26044	21.3	21.3
2	1.97126	9.9	31.2
3	1.47766	7.4	38.5
4	1.41464	7.1	45.6

# FACTOR ANALYSIS SELF-ACTUALISATION

Varimax Rotation 1, Extraction 1, Analysis 1 - Kaiser Normal

ARTISTS

Varimax converged in 11 iterations.

Rotated Factor Matrix:

Number of Cases -117

	Mean	Std Dev	Communality	*		FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
FAC01	4.44444	.74792	.35314	*	SELFAC01	.01598	.07019	.44738	.38446
FAC02	4.77778	.49325	.18446	*	SELFAC02	.31469	-.11962	.25434	-.08017
FAC03	4.05983	.98515	.42726	*	SELFAC03	.02185	-.35478	.50829	.20627
FAC04	4.64957	.64749	.23768	*	SELFAC04	.09667	.04693	.02297	.47498
FAC05	3.59829	.82064	.38926	*	SELFAC05	-.21180	.29246	.12108	.49417
FAC06	4.14530	.89312	.12351	*	SELFAC06	.12356	.08435	.04335	.31504
FAC07	3.45299	1.05451	.32378	*	SELFAC07	.39065	.37209	.15361	.09550
FAC08	3.52991	.90566	.46573	*	SELFAC08	.01050	-.05085	.68042	.00760
FAC09	3.58974	.97516	.37522	*	SELFAC09	.26304	.05596	.53005	.14814
FAC10	3.17949	.97923	.44977	*	SELFAC10	.06122	-.08418	.20050	.63145
FAC11	4.29060	.84138	.67402	*	SELFAC11	.67706	.16763	-.12366	.81499
FAC12	4.00855	.99564	.70903	*	SELFAC12	.76642	.00187	-.06362	.34290
FAC13	3.89744	1.02876	.66580	*	SELFAC13	.78855	.08411	.18792	.04006
FAC14	3.87179	.99601	.59505	*	SELFAC14	.58002	.19219	.26437	-.38962
FAC15	4.40171	.74348	.38808	*	SELFAC15	.33273	.33816	.40201	.03751
FAC16	3.81197	1.20295	.36987	*	SELFAC16	.01901	.29681	.52595	.06922
FAC17	3.63248	1.10327	.31024	*	SELFAC17	.06876	.44335	-.01381	.32980
FAC18	3.82051	1.01383	.45731	*	SELFAC18	.00848	.67514	-.02670	-.02666
FAC19	3.94872	.97243	.65917	*	SELFAC19	.08901	.78698	-.01221	.17824
FAC20	3.72650	.94343	.49246	*	SELFAC20	.14557	.53123	.43479	.00457

Factor Transformation Matrix:

actor	Eigenvalue	Pct of Var	Cum. Pct		FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
1	3.81733	19.1	19.1	FACTOR 1	.63862	.49137	.46785	.36309
2	1.75069	8.8	27.8	FACTOR 2	.34937	-.81481	.45273	-.09515
3	1.64903	8.2	36.1	FACTOR 3	-.67935	.00090	.61121	.40609
4	1.43378	7.2	43.3	FACTOR 4	.09271	-.30762	-.45008	.83319

Varimax Rotation 1, Extraction 1, Analysis 1 - Kaiser Normal:

Varimax converged in 6 iterations.

Rotated Factor Matrix:

CONTROLS

Number of Cases -70

	Mean	Std Dev	Communality	*		FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
1	4.03636	.94209	.33409	*	SELFAC01	-.01788	.13305	.47936	.29374
AC02	4.34545	1.05792	.74443	*	SELFAC02	.33112	-.00540	.79367	-.06956
AC03	3.98182	.95240	.44042	*	SELFAC03	.04279	.47165	-.19092	-.42389
AC04	4.01818	1.04511	.68729	*	SELFAC04	.20670	.17656	.78317	.00618
AC05	2.92727	1.18407	.65574	*	SELFAC05	.50021	.40134	.48924	-.07142
AC06	3.47273	1.33131	.61522	*	SELFAC06	.68283	.09159	.23224	.29434
AC07	3.29091	.89593	.31312	*	SELFAC07	.33959	.21723	-.04465	.38550
AC08	3.47273	1.06900	.38958	*	SELFAC08	-.45099	-.20010	-.09021	.37149
AC09	3.60000	.99256	.47142	*	SELFAC09	-.62720	.25696	-.10961	.00080
AC10	2.72727	.80403	.38857	*	SELFAC10	-.14066	.19638	.16938	.54912
AC11	4.18182	.90453	.33324	*	SELFAC11	-.16253	-.00633	.55189	.04685
AC12	3.81818	.98302	.54995	*	SELFAC12	.18584	.70504	.13315	.02454
AC13	3.65455	1.05792	.44941	*	SELFAC13	.31099	-.02320	.17937	.56567
AC14	3.29091	1.13321	.60229	*	SELFAC14	.45459	.53030	.20729	.26731
AC15	3.90909	.86651	.63253	*	SELFAC15	.04292	.72643	.11291	.30040
AC16	3.67273	1.18719	.50028	*	SELFAC16	.01031	.03764	-.11113	.69743
AC17	3.30909	1.27472	.56636	*	SELFAC17	.10266	.74070	.08467	.00505
AC18	3.25455	1.23556	.65931	*	SELFAC18	.75859	.28057	-.05360	-.04761
AC19	3.56364	1.21356	.72320	*	SELFAC19	.78940	.22083	.15604	-.16413
AC20	3.92727	.76629	.17651	*	SELFAC20	.38196	.08988	-.08583	.12318

Factor Transformation Matrix:

actor	Eigenvalue	Pct of Var	Cum. Pct		FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
1	4.89655	24.5	24.5	FACTOR 1	.70775	.52572	.44443	.15874
2	2.01500	10.1	34.6	FACTOR 2	-.43379	.08093	.29200	.84852
3	1.78369	8.9	43.5	FACTOR 3	-.24001	.79554	-.55629	-.00714
4	1.53772	7.7	51.2	FACTOR 4	-.50330	.29015	.63856	-.50472

Appendix P

# FACTOR ANALYSIS SELF-ACTUALISATION

Varimax Rotation 1, Extraction 1, Analysis 1 - Kaiser Normalization.

Varimax converged in 7 iterations. **MALES**

Rotated Factor Matrix:

Number of Cases = 70

	Mean	Std Dev	Communality		FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
MFAC01	4.25714	.87949	.45868	* SELFAC01	.60465	.00922	.30306	.03371
MFAC02	4.58571	.78929	.47836	* SELFAC02	.58065	-.06025	-.31743	.19187
MFAC03	3.98571	.90878	.33141	* SELFAC03	.52295	-.12556	.20518	-.00783
MFAC04	4.48571	.88043	.54346	* SELFAC04	.60026	.02579	-.40222	.14387
MFAC05	3.37143	1.07907	.70687	* SELFAC05	.62580	.54881	-.09039	-.07668
MFAC06	3.97143	1.10298	.46642	* SELFAC06	.47990	.42550	-.05388	.22841
MFAC07	3.57143	1.01541	.24287	* SELFAC07	.09358	.13003	.41978	.20245
MFAC08	3.50000	1.00362	.42153	* SELFAC08	.01439	-.35753	.52476	-.13462
MFAC09	3.51429	.95921	.42258	* SELFAC09	.13770	-.31189	.51022	.21451
MFAC10	3.05714	1.00557	.18478	* SELFAC10	.27621	.15530	.24338	.15854
MFAC11	4.17143	.90043	.68086	* SELFAC11	.26757	.12075	-.28054	.71832
MFAC12	3.78571	1.10195	.52889	* SELFAC12	.15141	-.05778	.08423	.70394
MFAC13	3.64286	1.02201	.67538	* SELFAC13	-.12139	-.00151	.20953	.78533
MFAC14	3.57143	1.14931	.35315	* SELFAC14	.14886	.36328	.12396	.42855
MFAC15	4.21429	.89916	.43321	* SELFAC15	.45456	.31562	.35615	-.01127
MFAC16	3.42857	1.31404	.46388	* SELFAC16	-.03028	.10320	.64957	-.17429
MFAC17	3.57143	1.12381	.26998	* SELFAC17	.44472	.24847	-.00394	.10222
MFAC18	3.68571	1.13626	.62203	* SELFAC18	-.04646	.78486	.04535	-.04262
MFAC19	3.75714	1.05550	.70219	* SELFAC19	.16267	.81226	.07331	.10286
MFAC20	3.62857	.88746	.53996	* SELFAC20	-.04710	.10499	.69126	.22109

Factor	Eigenvalue	Pct of Var	Cum Pct
1	3.77016	18.9	18.9
2	2.38766	11.9	30.8
3	1.86568	9.3	40.1
4	1.50299	7.5	47.6

Varimax Rotation 1, Extraction 1, Analysis 1 - Kaiser Normalization.

Varimax converged in 9 iterations. **FEMALES**

Rotated Factor Matrix:

Number of Cases = 103

	Mean	Std Dev	Communality		FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
MFAC01	4.34951	.80084	.62051	* SELFAC01	.26558	-.15289	.60647	.39849
MFAC02	4.67961	.71693	.60740	* SELFAC02	.23888	.15560	.66782	-.28309
MFAC03	4.05825	1.01774	.03631	* SELFAC03	-.02993	-.00419	.05174	.18090
MFAC04	4.41748	.82277	.65429	* SELFAC04	.23945	.18872	.74920	-.00561
MFAC05	3.38835	.94177	.46367	* SELFAC05	.49590	-.01851	.46626	-.00207
MFAC06	3.90291	1.08929	.31419	* SELFAC06	.49246	.09796	.22175	-.11359
MFAC07	3.29126	.98649	.52803	* SELFAC07	.21046	.65065	.19213	-.15320
MFAC08	3.51456	.92740	.46374	* SELFAC08	-.12784	.06046	.10830	.65728
MFAC09	3.64078	.98870	.47607	* SELFAC09	.08753	.13161	-.12302	.66027
MFAC10	3.00971	.91282	.51005	* SELFAC10	-.21430	.23039	.56662	.29998
MFAC11	4.31068	.82876	.64472	* SELFAC11	-.15797	.76316	.00723	.19314
MFAC12	4.05825	.89470	.57705	* SELFAC12	.40286	.63004	.06396	.11712
MFAC13	3.93204	1.04095	.55806	* SELFAC13	.21842	.65036	.19135	.22531
MFAC14	3.74757	1.02631	.52898	* SELFAC14	.40041	.57971	.14667	-.10526
MFAC15	4.26214	.75357	.58654	* SELFAC15	.45160	.40566	.15599	.44012
MFAC16	3.98058	1.06624	.34978	* SELFAC16	-.01784	.27014	.46164	.25175
MFAC17	3.49515	1.19537	.56255	* SELFAC17	.65817	.07302	-.08932	.34066
MFAC18	3.61165	1.10465	.60506	* SELFAC18	.72408	.13139	.15834	-.19602
MFAC19	3.86408	1.07602	.52154	* SELFAC19	.52461	.32198	.23566	-.29515
MFAC20	3.90291	.88022	.27568	* SELFAC20	.50531	.14262	.00105	.00130

Factor Transformation Matrix:

Eigenvalue	Pct of Var	Cum Pct		FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
4.93735	24.7	24.7	FACTOR 1	.62215	.58600	.50399	.12459
2.04128	10.2	34.9	FACTOR 2	-.45802	.31261	-.00380	-.83215
1.59279	8.0	42.9	FACTOR 3	-.16353	-.54916	.81073	.12000
1.31281	6.6	49.4	FACTOR 4	.61352	-.50725	-.29782	.52688

# FACTOR ANALYSIS SELF-ACTUALISATION

Varimax Rotation 1, Extraction 1, Analysis 1 - Kaiser Normaliza

SIXTH FORM

Varimax converged in 18 iterations.

Rotated Factor Matrix:

Number of Cases -96

	Mean	Std Dev.		FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
FAC01	4.25000	.84604	SELFAC01	.22774	.41660	.01373	.56302
FAC02	4.56250	.75131	SELFAC02	.59091	.00512	.20664	.22682
FAC03	3.98958	1.01042	SELFAC03	.06629	-.02598	-.04880	.53185
FAC04	4.38542	.79960	SELFAC04	.62172	.09817	.22928	.36629
FAC05	3.19792	1.07233	SELFAC05	.71280	.10850	.13156	.16359
FAC06	3.82292	1.12385	SELFAC06	.65444	-.03002	.24536	.23864
FAC07	3.29167	1.00438	SELFAC07	.19562	.00765	.57557	-.04689
FAC08	3.51042	.98403	SELFAC08	-.47131	.42402	.06957	.06539
FAC09	3.56250	.99274	SELFAC09	-.40421	.46978	.10785	.32634
FAC10	2.94792	.95554	SELFAC10	.03155	-.14912	.54353	.31933
FAC11	4.26042	.89730	SELFAC11	.06402	.24251	.72393	-.18873
FAC12	3.76042	1.00257	SELFAC12	.16388	.45541	.54631	.10862
FAC13	3.81250	1.03936	SELFAC13	.12306	.44916	.53280	-.10587
FAC14	3.56250	1.08397	SELFAC14	.46018	.17940	.30056	.09416
FAC15	4.02083	.89418	SELFAC15	.27947	.65358	.06353	.29225
FAC16	3.90625	1.10576	SELFAC16	-.02510	.47690	.06806	-.03362
C17	3.34375	1.24671	SELFAC17	.34857	.42253	.01926	.22547
C18	3.52083	1.13304	SELFAC18	.74406	.18774	-.20665	-.20914
FAC19	3.68750	1.12683	SELFAC19	.75725	.14868	.21669	-.30131
FAC20	3.69792	.90751	SELFAC20	.14437	.55139	.09792	-.30638

Factor Transformation Matrix:

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
FACTOR 1	.77916	.41064	.43818	.17968
FACTOR 2	-.60766	.68016	.38199	.14905
FACTOR 3	.03200	.14740	-.53573	.83081
FACTOR 4	-.15045	-.58910	.61244	.50522

Varimax Rotation 1, Extraction 1, Analysis 1 - Kaiser Normal

HIGHER EDUCATION

Varimax converged in 13 iterations.

Rotated Factor Matrix:

Number of Cases -76

	Mean	Std Dev	Communality	*		FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
1	4.39474	.81778	.41587	*	SELFAC01	.16455	-.10354	.41078	.45754
FAC02	4.73684	.73699	.58533	*	SELFAC02	-.07968	.22787	-.00811	.72594
FAC03	4.09211	.92632	.27055	*	SELFAC03	-.16176	.19216	.44057	-.11557
FAC04	4.52632	.90146	.59463	*	SELFAC04	-.06355	.23891	-.05205	.72856
FAC05	3.61842	.84801	.58365	*	SELFAC05	.20403	-.28645	.13261	.66512
FAC06	4.06579	1.04990	.19224	*	SELFAC06	.41251	.01992	.11697	.08940
FAC07	3.53947	.99921	.41322	*	SELFAC07	.55868	.28150	.14444	-.03147
FAC08	3.51316	.93086	.50625	*	SELFAC08	.05657	-.18665	.66203	.17298
FAC09	3.63158	.96391	.43063	*	SELFAC09	.04548	.27021	.57628	-.15315
FAC10	3.14474	.93387	.44030	*	SELFAC10	.15995	.05481	.58331	.26733
FAC11	4.25000	.81854	.59153	*	SELFAC11	-.05790	.71092	-.02512	.28660
FAC12	4.18421	.93396	.46233	*	SELFAC12	.05962	.67614	-.02476	.03150
FAC13	3.82895	1.05056	.68000	*	SELFAC13	.23397	.77078	.17647	-.00370
FAC14	3.84211	1.04630	.59219	*	SELFAC14	.46332	.60320	.09685	-.06556
FAC15	4.52632	.59941	.38372	*	SELFAC15	.52996	.11936	.29380	.04794
FAC16	3.59211	1.28766	.47187	*	SELFAC16	.48438	-.04944	.47599	.09075
FAC17	3.76316	1.01808	.29898	*	SELFAC17	.45294	.07165	-.27594	.11201
FAC18	3.78947	1.08709	.39786	*	SELFAC18	.61706	.12301	-.01705	-.04099
FAC19	4.00000	.96609	.56684	*	SELFAC19	.73021	-.06207	-.17196	.01462
FAC20	3.90789	.86684	.47274	*	SELFAC20	.50828	-.05288	.37872	-.26110

Factor Transformation Matrix:

Factor	Eigenvalue	Pct of Var	Cum Pct		FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
1	3.62895	18.1	18.1	FACTOR 1	.73261	.46062	.46087	.19675
2	2.11443	10.6	28.7	FACTOR 2	-.40823	.75596	-.28739	.42341
3	2.04606	10.2	38.9	FACTOR 3	-.22461	-.39913	.42193	.78244
4	1.56128	7.8	46.8	FACTOR 4	.49617	-.23883	-.72593	.41206

Appendix R